Manufacturing activities in Greater London : the planning implications of productivity-led employment decline in the 1980s.

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Abstract

Between 1981 and 1991 manufacturing employment in London declined by just under 50%, a loss of over 325,000 jobs. Relative to Great Britain, the employment performance of London's industry has been poor in the extreme. Much previous research has addressed the issue of urban manufacturing decline, and a variety of competing explanations have been put forward to explain the general observation that cities have been losing manufacturing at an extremely fast rate relative to small towns and rural areas. Despite the wealth of literature that exists, much remains unknown about what is actually happening to London's manufacturing and also why London's industrial jobs are being lost in such a severe and consistent manner. This thesis explores the dimensions of manufacturing employment change in London over the 1980s, highlighting some important processes which have characterised and underpinned industrial change. It does so in relation to a set of local authority land use planning policies which have attempted to protect manufacturing jobs. Using survey based methods, the thesis shows that while many borough planning authorities have explicitly pursued these policies over the 1980s, the majority believe that they have not been successful in protecting manufacturing jobs. Through an examination of a variety of different indicators of change, the thesis uncovers the empirical context within which planning policies have operated over the 1980s. It shows that the experience of manufacturing change in the capital is not only one of decline and that contradictory and inconsistent trends appear to have taken place. The thesis demonstrates that many of these inconsistent trends may be reconciled with respect to changing labour productivity, which provides a useful perspective on the nature of manufacturing change in the capital. Through the use of econometric techniques and data analysis, the thesis shows that labour productivity in London is characterised by a highly waged, and highly skilled manufacturing sector, with an overall low ratio of labour to capital. The thesis argues that labour productivity growth encapsulates a variety of processes which offer sound reasons for the lack of success of employment protection policies.

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A list of acronyms commonly used in the thesis.

CDA	Comprehensive Development Area
CES	Constant Elasticity of Substitution
CIFS	Commercial and Industrial Floorspace Statistics
CoE	Census of Employment
CoP	Census of Production
CRS	Constant Returns to Scale
CSO	Central Statistical Office
DE	Department of Employment
DoE	Department of the Environment
DTI	Department of Trade and Industry
GDO	General Development Order
GDP	Gross Domestic Product
GLC	Greater London Council
GLDP	Greater London Development Plan
GoL	Government office for London
GVA	Gross Value Added
LCC	London County Council
LDMS	London Development Monitoring System
LPA	Local Planning Authority
LPAC	London Planning Advisory Committee
LRC	London Research Centre
OLS	Ordinary Least Squares
OMA	Outer Metropolitan Area
NES	New Earnings Survey
NOMIS	National On-Line Manpower Information System
PAG	Property Advisory Group
PPG	Planning Policy Guidance
RICS	Royal Institute of Chartered Surveyors
RTPI	Royal Town Planning Institute
ROSE	Rest of the South East
SERPLAN	South East Regional Planning Conference
SIC	Standard Industrial Classification
SMSA	Standard Metropolitan Statistical Area (US)
UCO	Use Classes Order
UDP	Unitary Development Plan
VAT	Value Added Tax

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This thesis is dedicated to my mother and father.

Chapter 1 : Introduction.

1.0 introduction.

The increasing dominance of service sector employment in the London economy, which has accelerated so acutely over the 1980s, has been profoundly influenced by the severe absolute and relative loss of manufacturing jobs within the capital. Approximately 50% of London's manufacturing employment was shed between 1981 and 1991, some 325,000 jobs. Research already exists which has explored the dimensions of manufacturing employment change in London, yet much remains unknown about what is actually happening to London's industrial base, particularly regarding the processes which underpin such extreme and consistent job loss, and also why London's performance stands out from national change in this respect. This thesis investigates London's manufacturing employment change in relation to a set of local authority land use planning policies which have attempted to protect manufacturing jobs. Through examination of a variety of different sources of evidence on manufacturing change in the capital, it is shown that contradictory and inconsistent trends appear to have taken place over the 1980s. The thesis demonstrates that many of these inconsistent trends can be reconciled with respect to changing labour productivity, and that this in turn offers an important insight into the nature of industrial manufacturing employment change in London, and is of critical importance in understanding the role of manufacturing in the London economy today. The thesis also argues that the analysis of labour productivity offers sound reasons for the lack of success of London land use planning policies aimed at protecting manufacturing jobs. If extended to other contexts, analyses of changing labour productivity could have far reaching implications for the understanding of spatial differences in the employment performance of industry.

1.1 The subject of the thesis.

The thesis explores two broad themes related to change in the London manufacturing sector over the 1980s. It is concerned with employment change in manufacturing industries in the capital and with the processes which have underpinned this change, particularly with regard to labour productivity growth. Additionally, the different facets

of manufacturing change are examined within the context of local authority land use planning controls which have attempted to protect manufacturing jobs. This dual approach in the thesis is a feature of the development of the research and it is worth briefly tracing the steps that shaped the scope of the final research.

Initially, it was intended that the thesis should study the effects of two particular deregulation measures made to the planning system in the 1980s on London's manufacturing employment change.[1] During the course of the research however, and particularly through analyses of the London manufacturing employment change data, it became apparent that the planning deregulation of interest was unlikely to have had a significant influence on London's manufacturing employment change. Most importantly, the loss of manufacturing jobs in London over the 1980s was so remarkably severe that the task of isolating specific land use deregulation effects would have been extremely difficult, as well as potentially unrewarding. This is because much of the data required to analyse the effects of the changes did not exist, and bodies such as the London Planning Advisory Committee(LPAC) who had attempted similar research in the past had warned that it would be a particularly difficult task given that the borough planning authorities would only be able to provide limited help.

The thesis then moved to consider the role of land use planning in a slightly wider context. It became apparent that London's local planning authorities (LPAs) were well aware of the scale of manufacturing job loss that had taken place over the eighties and that many authorities had developed policies to 'protect' manufacturing jobs through the use of land use regulation. These policies have been pursued through the development control system, where planning authorities have adopted a restrictive stance towards changes of use from manufacturing land and buildings, in the hope of retaining the employment opportunities offered by industrial use. The examination of these types of planning policies held considerable attraction for two main reasons. First, because they represented a direct reaction to the observed trend of manufacturing job loss. Second,

[1] In the initial research proposal, the thesis sought to explore influences on manufacturing employment change that may have arisen from the introduction of the business use class (B1) under the Town and Country Planning (Use Classes) Order 1987 and the extension of permitted development related to this class under The Town and Country Planning General Development Order 1988. Although the specific focus on these changes was abandoned, for reasons cited in chapters three and five, they still form an important component of the thesis research.

because it seemed that despite the severity of employment decline land use planning controls could be of critical importance in manufacturing change, particularly given that many of the existing theoretical perspectives had emphasised the importance of space constraints and 'crowding out' in urban manufacturing change; processes it seemed that planning may be able to exert some influence over. In essence, the major change in the nature of the research as it progressed was that it moved from seeking to determine what the influences of planning regulations on employment change were, to a consideration of how planning policy had responded to manufacturing job loss, and why it had been so unsuccessful.

A survey was prepared which addressed these issues and was sent to the 33 LPAs within the Greater London conurbation. The results, presented in chapter five, were extremely interesting, however, perhaps the most consistent and important LPA response was that serious constraints existed on the extent to which any difference could be made to manufacturing employment loss. The LPAs felt that job change was created by the 'market' and not by planning policy, and the processes underpinning manufacturing employment loss were largely outside the scope of LPA control. On the basis of the survey results, a decision was taken to shift the focus of the remaining chapters of the thesis away from policy, and to ask what was actually happening to manufacturing in London. The boroughs believed that they could not exert a significant influence on manufacturing employment decline, and thus, to focus on planning policy alone and to play down the importance of processes underpinning manufacturing change would be unlikely to uncover the unique nature of job loss in the capital's industry, nor the reasons for the lack of success in employment protection. It therefore seemed logical to explore the empirical context within which policy operates, and to draw out implications on this basis. From this point on, the research sought to determine the dominant characteristics of manufacturing change in London over the 1980s, with a view to understanding the remarkable scale of job loss, as well as to developing sound reasons for the lack of success of planning policy.

It should be stressed here that the planning content of this thesis is not regarded as subservient to other themes and forms a central component of the final research. The concern with land use planning, and with employment protection policies, has much

substantive and theoretical relevance as is shown in chapter three. However, it can also be considered as an approach to the issue of what is actually happening to London's manufacturing. For example, the thesis will show how research questions arose through consideration of land use and planning aspects of employment change, and that subsequent empirical analyses could be placed within this context, providing a useful basis to reflect upon the potential implications of empirical results. In addition, the results of the LPA survey are extremely interesting in themselves and answer a number of research questions as well as posing additional question for further consideration.

Two main related objectives of the thesis may therefore be defined. First, to examine the dominant characteristics of manufacturing industry and its change in London over the 1980s which have been instrumental in creating the severe and consistent loss of employment. Second, to explore the planning authority response to manufacturing employment decline in the capital, and to obtain evidence on the success or otherwise of LPA policy.

Through this second objective, the research discovered that high labour productivity characterises London's manufacturing in the 1980s, and much space in the thesis is subsequently devoted to this observation. As mentioned in section 1.0, one of the main reasons for the focus on labour productivity is that it offers a means by which many of the contradictory and inconsistent trends in London's manufacturing may be reconciled. Perhaps more importantly, the thesis shows that this process has had a critical influence on the nature of London's manufacturing employment decline over the 1980s. Previous studies of London's manufacturing change, and indeed most mainstream economic geography research, has paid slight attention to the issue of spatial differentials in productivity. Yet differences between areas in their rates of growth of labour productivity offer a crucial dimension in explaining variations in employment change, and this may be particularly true of the urban case. It is the contention of this thesis, that in ignoring this issue, previous London research has omitted a component which is of central importance in explaining manufacturing employment decline.

It is worth stressing one final issue concerning the broad scope of the thesis. The aim here is to describe and analyse change in the London manufacturing sector and the

implications for land use planning policy. Many of the research findings must be relevant to the employment opportunities and changing social fortunes of London employees, however, this thesis does not attempt to address the social implications of manufacturing employment decline or of labour productivity growth.

1.2 Methodological approach of the thesis.

Specific research methodologies, such as survey based methods and econometric modelling, are used in this thesis to answer research questions or to test hypotheses. These types of methods are described in the appropriate places in the text, or in appendices referred to in the text, and do not require detailed description here. It is however worth making clear at this stage the main thrusts of the methodological approach.

The thesis is empirical and largely of a quantitative nature, although qualitative issues are addressed particularly in relation to planning policy. The thesis uses aggregate data sets and survey based techniques to investigate land use regulation and manufacturing change in London over the 1980s. In a philosophical sense, empirical research of this type is often associated with the doctrine of logical positivism, which seeks to firmly establish knowledge on a verifiable basis through the testing of hypotheses based on factual statements, and may also seek to make "empirical generalisations, statements of a law like nature which relate to phenomenon that are empirically recognisable." (Johnston, 1986, 11) Johnston points out that in geographical research, and in social science research generally, many empirical analysts regard the systematic description of quantitative research as 'positivist' as an inaccurate classification since in many cases such research will not seek to produce 'laws' in the same way that it might in natural science. Furthermore, quantitative methods are also used by researchers within other philosophical positions.

Of the four broad schools of empiricism, positivism, humanism, and structuralism that Johnston (1986) describes, much of the research in this thesis would be most closely associated with positivism since it focuses largely on observable and testable phenomena. However, the methodological development of the research did not strictly

adhere to the philosophical bounds prescribed in logical positivism. The thesis employed a methodological strategy which it was anticipated would allow for the research questions to be addressed in a meaningful way given time and resource constraints. It is worth outlining the methodological development of the research and the decisions that had to be made in this respect.

The thesis is partly concerned with the use of land use planning regulations to protect manufacturing jobs in London over the 1980s. The first methodological issue to be resolved concerned the appropriate spatial focus of the research. The thesis addresses urban rather than regional change. As will be made clear in chapter two, the city is thought to be the principal focus of manufacturing decline and the thesis draws upon this specific context of intra-regional change to explore the operations of land use planning. Much previous literature has emphasised the issue of urban deindustrialisation and has provided sound theoretical reasons for assuming that land use planning controls could make important differences in the urban setting. A regional perspective was not adopted in this thesis, principally because the emphasis was placed on exploring the relationship between land use planning controls and urban manufacturing decline in detail, rather than to highlight the importance of broader geographical differences. That is not to imply that a regional perspective would have been deficient in any way, but simply, that it would have involved asking very different questions and would have required a very different research focus.

For the analysis of the Greater London area, two main geographical strategies were considered. First, to attempt a full coverage of all boroughs within the Greater London area, and second, to focus on specific areas within the capital. The first option was chosen for three main reasons. First, because it would allow for comprehensiveness and diversity and difference of urban circumstance to enter into the results obtained. The scale and complexity of London was an issue the research sought to highlight rather than simplify. Second, it was thought that if the 33 boroughs planning authority areas would form the basic units of analysis, this was not such a significant number of observations that a sufficient degree of detail could not be sought. Third, the option of selecting case studies would necessarily have involved the imposition of pre-defined

spatial analytical framework on the research and in this respect may have placed important and unnecessary constraints on the scope of analysis.

Having defined the spatial coverage of the research, it was first decided that manufacturing employment change should be quantified to specify the empirical context within which employment protection policies function. To do this, data from the Census of Employment was analysed sectorally and spatially for London over the 1980s, providing evidence of the scale and scope of change within London, and highlighting differences with the nation as a whole.

The thesis next sought to address the issue of land use planning regulations and the protection of manufacturing jobs. Two main methodological approaches were considered at this stage : to attempt to quantify the effects of employment protection policies through empirical analysis, or to ask the borough planning authorities themselves about the operation of these policies in a more qualitative fashion. The scale of employment decline that was apparent from the empirical analysis conducted suggested that LPAs in London had either not attempted to protect manufacturing jobs, or had been extremely unsuccessful in doing so. The lack of systematic variation in rates of change between the boroughs indicated that land use regulation was unlikely to be of critical importance, and in this respect, a quantitative analysis was thought inappropriate, largely because it would be extremely difficult to disentangle the effects of planning policy from other, perhaps more fundamental, influences on employment change. In addition, it is not possible to evaluate accurately the 'output' of the planning system through quantitative methods and even planning statistics such as development control data give no indication of the policy stance adopted in reaching any final decision. Thus it seemed that the most appropriate means of exploring the effects of planning regulations was to ask the authorities involved and, for reasons discussed in appendix four, the survey of LPAs became more qualitative than quantitatively based.

On the basis of survey results some tentative conclusions could be reached about the use of employment protection policies, most importantly, that LPAs felt that they could only achieve limited success and that manufacturing employment change was largely outwith the scope of planning control. The research then moved in the remaining three empirical

chapters to explore the ways in which London's manufacturing was changing, such that land use planning regulations could not influence employment decline to any great extent. To do this, aggregate empirical analyses of different data sets were conducted using various quantitative techniques including econometric methods. The objectives were to highlight, quantify, and attempt to explain, some of the dominant characteristics of London's manufacturing sector, and of its change over the 1980s, and to relate these back, in the conclusions of the thesis, to the results generated from the LPA survey. The nature of these quantitative investigations required that the spatial analytical framework be widened to consider London as a whole, and also to examine change in the capital in relation to other areas of the country.

Clearly, this last stage of examining change in London's manufacturing sector could have been approached in a number of different ways (Massey, Meegan, 1985), for example, through a more detailed industry 'case study' approach. The use of the aggregate data approach was used in this thesis in preference to a case study based approach on the following grounds. First, because the thesis seeks to understand the broad processes operating to shift the economic base of the capital and not how individual firms operate. Second and related, the nature of the case study approach requires that only some industries in particular areas may be studied, and while this is useful for particular research questions, it is less relevant to the present research which seeks to understand the manufacturing sector of an urban economy in a comprehensive fashion, and how land use planning can influence employment change from this sector. Third, because the detailed empirical analyses could contribute to, and further the findings of, existing literature, much of which had drawn upon similar research techniques. Finally, it was found that through the bringing together of a variety of different data sets for analysis some inconsistencies and complexities of manufacturing change in London became apparent and were of themselves interesting and readily available for analysis.

This last point is of considerable importance, as it highlights one of the main contributions of this research. The thesis employs the use of many different data sets to analyse manufacturing change, some of which have not been commonly used in similar British studies. Previous analyses of the London economy have frequently utilised

employment data, largely due to its superior industrial and geographical disaggregation and its high degree of accuracy. To quote Randall "employment change is used as an index of regional economic change through necessity rather than choice" (Randall, 1973, 3). This thesis highlights the misconceptions and difficulties that can arise in understanding employment change through a narrow focus on employment data alone. It argues that in certain respects this type of analysis can lead to some degree of confusion over whether London is deindustrialising and in what ways. Thus, the empirical focus is not only job change but on other processes related for example to land use and floorspace change, firm entry, output change and labour productivity growth.

The research strategy of the thesis is only one course of analysis that could have been adopted. This point is raised by Fothergill and Gudgin (1985) who argue that any specific chosen method should not necessarily be seen as conflicting with other approaches, but as the one most relevant to the question posed. The choice of methodological approaches used here was adopted on this pragmatic principal, and it is hoped that this will be apparent as the thesis progresses.

1.3 The structure of the thesis.

The thesis structure, closely following the chronological order in which the research was undertaken, unfolds a logical sequence of the issues to be addressed within. The remainder of this chapter reviews previous research on London's industry providing an historical basis for the empirical analysis of the 1980s undertaken in this thesis. It considers the industrial development of London, and the subsequent decline of manufacturing that has taken place in the capital since the 1960s.

Chapter two reviews theoretical perspectives on economic change which have featured in the geographical literature. The chapter emphasises explanations for urban manufacturing decline reporting the relevance of different theories to the case of London. The purpose of this chapter is to provide a substantive and theoretical context as a basis upon which to consider the relevance of planning controls, and will later allow the empirical findings of the thesis to be considered in relation to relevant existing theories.

Chapter three presents arguments which justify why land use planning regulations may be of considerable importance in influencing urban manufacturing change. It outlines the ways in which planning authorities may use land use intervention to influence employment opportunities, and cites cases of the use of 'employment protection policies' for manufacturing industry. In addition, this chapter presents research questions and hypotheses for investigation concerning the relationship between land use planning and manufacturing employment change.

Chapter four develops an empirical analysis of employment change in the London manufacturing sector which is concerned with both spatial and sectoral detail. The purpose of this chapter is to highlight the scale and scope of manufacturing employment change in the capital, and to provide an up-to-date and detailed empirical context for the research.

Chapter five presents results generated from a postal questionnaire survey of London LPAs, which was designed to explore the ways in which local authority land use planning controls have been used to protect manufacturing jobs. The results address issues such as the LPA perspectives on manufacturing employment decline, the types of policies that have been developed to influence this decline, whether LPAs believe these policies to have been successful or not, why policies have been successful or not, and what London authorities believe to be the main factors underpinning manufacturing employment decline in the capital.

On the basis of survey results, chapter six goes on to explore different dimensions of change in the London manufacturing sector. It shows that through consideration of a variety of different facets of manufacturing change inconsistent and often contradictory trends appear to arise. The chapter demonstrates the importance of labour productivity in London and argues that the process of labour productivity growth has the potential to explain, or at least reconcile, the trends and counter-trends that have taken place in London's manufacturing change over the 1980s.

Chapters seven and eight go on to analyse labour productivity in the London manufacturing sector in more detail. A body of literature is reviewed in chapter seven which has attempted to explain observed higher rates of labour productivity in the manufacturing sector of cities in other empirical contexts. A methodology designed to examine spatial differences in labour productivity is applied to the British case to explore the relative importance of a defined set of variables in explaining London's higher labour productivity in manufacturing. Chapter eight then goes on to look at changing labour productivity in London focusing on aspects related to structure and specialisation in industrial composition.

Finally, chapter nine draws conclusions, emphasising the main contributions of the thesis and reflecting upon the processes which have underpinned London's manufacturing change in relation to land use planning controls.

The thesis also include appendices which provide detail on particular issues discussed in the text. Appendix one describes the data sources used in the thesis and their associated classifications. Changes in the statutory and administrative bases of the London planning system are described in appendix two. In chapters three and five the thesis introduces the importance of specific deregulation measures made to the planning system under the 1987 UCO and the 1988 GDO, and these are outlined in detail in appendix three. Appendix four is concerned with aspect of survey design and methodology, and includes a copy of the postal questionnaire survey sent to the London LPAs.

1.4 Industrial growth and decline in Greater London.

The following section considers some of the main characteristics of the industrial development of London and of the subsequent decline in manufacturing activity that has taken place since the early 1960s. In doing so, various spatial definitions are introduced which are used throughout this thesis and these are shown graphically in Figure 1.1.

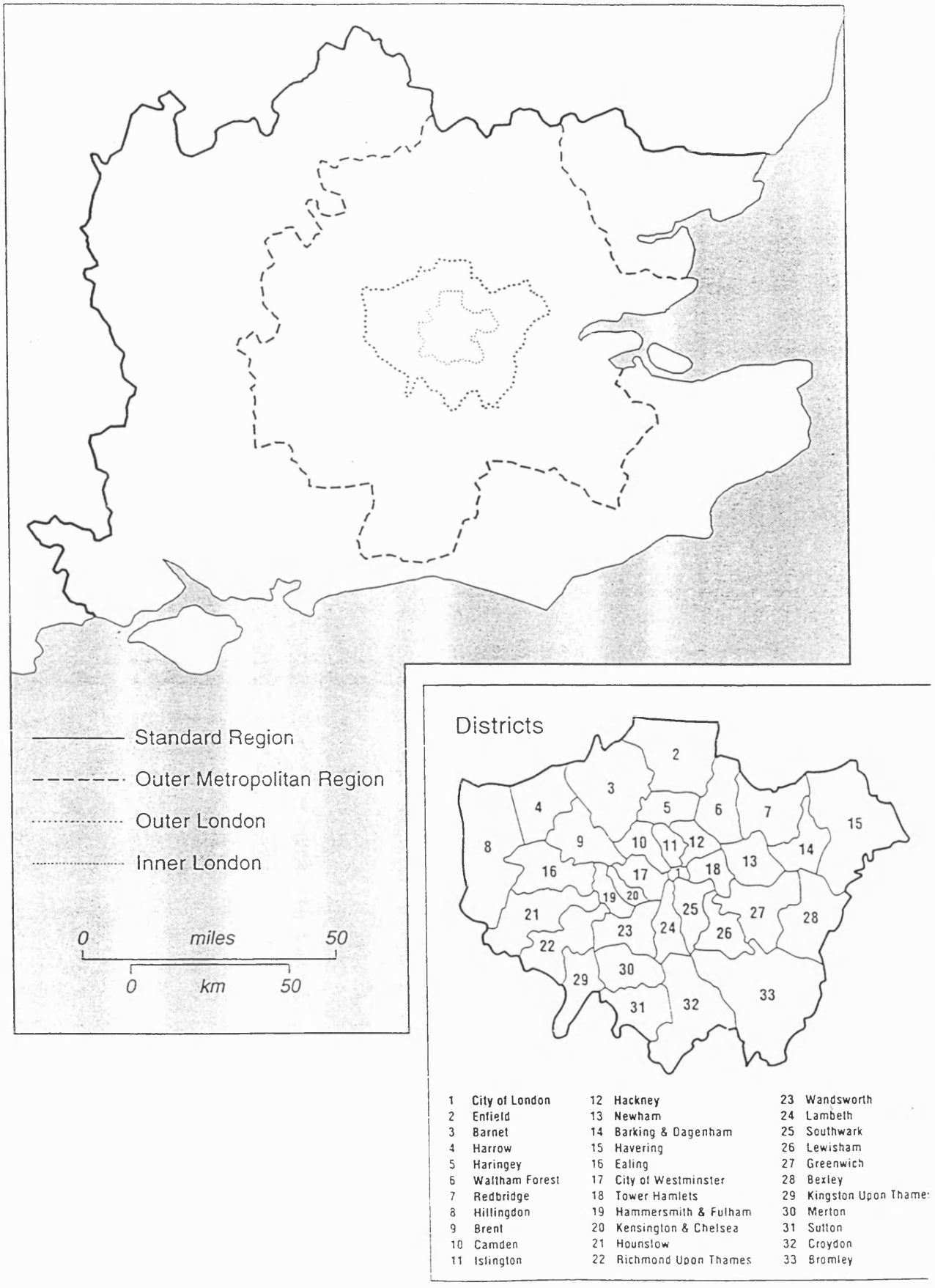

Figure 1.1 : A graphical representation of the spatial definitions referred to in this thesis.

The industrial development of London.

London did not feature prominently as a location for the manufacturing activities associated with the industrial revolution (Green D R,1991; Johnson, 1990; Lee, 1986; Schwarz, 1992). While provincial cities of pre-1800s Britain experienced an expansion of industry within sectors such as iron, textiles, and engineering, London's manufacturing remained small scale and labour intensive in nature, being conducted largely within workshops as opposed to factories, and utilising artisan skills. This was partly due to the fact that London did not have nearby supplies of coal or other raw materials required by 'heavy' industry, but also because of the shortage of space and the high costs of land, labour and fuel associated with the capital (Hall, 1962; Green D R, 1991; Schwarz, 1992). Despite the particular cost disadvantages of London for many manufacturing industries however, the huge concentrated market for goods, the abundant supply of skilled labour, and the overseas trade associated with port of London, created the basis for the development of a variety of high quality manufacturing trades.

Eighteenth century London maintained a diverse manufacturing sector with no single dominant industry or even group of associated industries (Hall, 1962; 1964). Little change in the nature of London's manufacturing activity occurred during the nineteenth century, however, industry continued to grow such that by the mid nineteenth century "the capital was clearly the most important single seat of manufacturing activity in the country" (Hall, 1962, 23). Until as recently as world war one, London's manufacturing largely involved the craft production of consumer goods in inner London, with processing of imports around the port of London, and very little in the way of large factory production. Industries which represented final links in the productive process remained concentrated in London, while those representing earlier links were less important (Hall, 1962; 1964; Green D R, 1991; Johnson, 1990; Schwarz, 1992). "Thus, London was deficient in textiles not clothing; in woodworking not furniture; in paper production not in stationery or printing" (Hall, 1962, 26).

These types of craft trades were significantly concentrated in the great Victorian industrial belt of London (Hall, 1962). This area, which was fully built up before 1900, formed a horseshoe shape which incorporated the cities of London and Westminster, parts of Southwark, and stretched out towards the North East boundaries of the county. The workshops within the crescent enjoyed advantages through small scale production and concentration as opposed to large scale factory production. Hall (1964) describes three important characteristics of these industries. First, they were not capital intensive and did not require specialised industrial premises. Instead they produced in small quantities to specific orders, and thus retained flexibility to changing demand. Second, they were characterised by a high degree of disintegration in the productive process, which allowed for vertical linkages between firms, and agglomeration economies were induced through concentration. As Hall (1964) points out, "no one firm could exist without the external economies offered by the existence of the metropolitan economic machine, and more particularly of the specialised industrial 'quarter', immediately outside the workshop" (Hall, 1964, 228). Third, the workshop industries relied on local demand, and particularly on the importance of the 'West End' retail market and the City and 'East End' wholesale market.

It should be stressed however, that the capital was also a major centre for employment in the service sector at this time. Indeed Hall (1962) notes that service industries, including building and construction, public utilities, transport, distribution, finance, administration, professional services and miscellaneous services, consistently made up over three fifths of the total labour force of London over the period 1861 to 1951, and accounted for about one quarter of all service workers in England and Wales. Thus even as early as the mid nineteenth century, it was not only that the capital was the largest manufacturing centre in the country that made it unique, but also the fact that a much smaller proportion of the London labour force were employed in manufacturing than in the other urban areas of Britain. Over the nineteenth century a disproportionate share of the national growth in office employment was concentrated in the capital (Stevens, 1964). London was well placed for this service sector expansion with the presence of Governmental functions, the location at hub of the road and rail networks, and the already well developed financial and commercial functions in the City, providing a basis for service growth (Martin, 1966). Furthermore, London's role as a major centre of

consumption, ensured an economic dependence on activities associated with trade, finance, and administration (Buck, Fainstein, 1992). Hall (1962) points out that since the mid-nineteenth century the service and manufacturing sectors have been concentrated in areas complementary to one another, with services powerfully attracted to Central London allowing accessibility to a wide labour market.

After the turn of the century the nature of manufacturing activity in London began to change. From the first world war until approximately 1960, London experienced a tremendous growth of industrial activity associated with an expansion of factory production in activities such as general engineering, chemical production, electrical engineering, vehicle manufacture, building supplies, modern household utilities, and aircraft manufacture. Consequently, the industrial geography of London altered substantially. The growth of new factories was almost entirely concentrated in the outer rings of London beyond the LCC area in a North West quadrant as well as in the Lea valley to the North East (Abercrombie, 1945; Green D R, 1991). The decentralisation of existing manufacturing, a phenomenon which had been evident since 1900 but had become more pronounced since world war one, also contributed to suburban employment growth (Forshaw, Abercrombie, 1943). The impetus for industrial location in the outer ring was induced by such factors as the provision of industrial estates with convenient ready to let premises, improvements in transport facilities, the need for more spacious sites, market proximity, and the adaptability and increasing mobility, and suburbanisation of the London labour force (Abercrombie, 1945; Green D R, 1991).

The spread of electricity provided another important catalyst to manufacturing expansion in London over this period (Green D R,1991; Johnson, 1990; Barlow Report, 1940; Abercrombie, 1945). As Abercrombie pointed out, "London possessed neither coal or mineral wealth. Now the almost universal availability of electric power has freed industry from its dependence upon the coalfields, while the very limited amount of bulky raw materials used in the manufacture of many modern consumer goods no longer necessitates locations near the source of raw materials" (Abercrombie, 1945, 40). Not only did electricity attract new industries, it also spurned an increase in demand for electric household goods which the new industries could provide (Green D R, 1991).

However, the expansion of manufacturing activity in London over this period was also partly consequent upon industrial decline in the provincial regions of Britain (Barlow Report, 1940; Forshaw, Abercrombie, 1943; Green D R, 1991; Johnson, 1990). As mentioned previously, the 'heavy' industries associated with the industrial revolution did not feature prominently in London and their demise, therefore, had a negligible effect upon industrial activity in the capital. In fact, the decline of heavy industry after world war one was in fact beneficial to London, resulting in the migration of labour from provincial regions to the South East, which supplied the labour requirements of the new expanding industries.

London's manufacturing sector continued to grow until at least the early 1960s and several factors sustained this growth. These include, the position London held as the country's largest and most wealthy consumer market; the expanding population of London which provided a huge pool of skilled and unskilled labour; the expansion of the central London service sector which induced continuing demands for manufacturing activities such as printing and publishing and office equipment; London's excellent transport links to other areas of the country, and the port of London, which allowed the efficient movement of industrial inputs and outputs (Buck et al., 1986). The service sector also expanded with new offices associated with manufacturing, sales, advertising, consultancy and operations research, trade unions, higher education, research, consultancy, and broadcasting (Hall, 1989a). By 1962, of the 24 employment divisions which comprised a standard categorisation of economic activity used in the UK, the Standard Industrial Classification (SIC), London was deficient in only four (Hall, 1964). Two of these were primary industries and the other two were manufacturing sectors associated with early stages in the productive process, none of which ever featured prominently in London.

By the 1960s then, London had what appeared to be a diverse and expanding manufacturing sector comprising older craft industries in the inner London boroughs and 'new' expanding sectors in outer London. However, the 1960s also marked a turning point in London's industrial structure, when manufacturing employment started to decline, while the service sector continued to expand.
Structural change of this nature was largely unanticipated. However, what had been apparent for a number of years was the continuing expansion of manufacturing activity

in the outer boroughs of the metropolitan area, and the closure and displacement of manufacturing activity in the congested core (Forshaw, Abercrombie, 1943; Abercrombie, 1945). This was a trend which continued, and coupled with slow growth or decline in the outer boroughs, signalled the beginning of London's manufacturing contraction.

The decline of London's manufacturing.

It is with the process of industrial decline in London over the 1980s that this thesis is concerned. The following section reviews previous literature on London manufacturing, describing the scale and nature of change that has affected London industry. In addition, a brief account is provided of the dominant trends in London's service sector.

Two points should be stressed concerning the scope of this section. First, the objective here is to provide a description of major trends not to discuss the underlying causes of industrial decline. Explanations for change form the subject matter of chapter two which reviews theories of manufacturing change and specifically relates these to London research. Second, this section is by and large not concerned with quantitative detail. Figures provided in different publications are often inconsistent, covering different time periods or using different sources, and as such are usually incompatible. In fact, in the literature reviewed, no detailed up-to-date comprehensive analysis of industrial change in London over the 1980s which incorporates a good degree of sectoral detail was discovered. Consequently, one objective of this thesis was to provide such an empirical description and this is achieved in chapter four. Here, previous research is used to describe trends rather than to provide a patchy and general background to quantitative measurements which are imperative to this thesis, and which require detailed and separate treatment in themselves.

Since at least the early 1960s Greater London has experienced a severe loss of manufacturing jobs. This trend is frequently cited, and universally accepted, as a major component of London's economic change over the last three decades. In 1960, approximately 1.34 million people were employed in London's manufacturing industries. By 1991 only 360,000 jobs remained, a decline in total manufacturing

employment of just under 75%. Authors have shown that this loss has been relatively consistent over the years, with no pause since it was first observed, and that rates of manufacturing employment decline in London have generally been worse than that experienced in the nation as a whole (Buck et al., 1986; 1992; Hall, 1989a; GLC, 1983; 1985; Hamilton, 1991; Kennedy, 1991; Fothergill et al., 1985). For example, Fothergill et al. (1985) have shown that between 1960 and 1981, London's rate of manufacturing employment loss of 51.4% was almost double that of Great Britain as a whole (26.3%), and also significantly higher than the average for the other British conurbations (43.2%). It is worth examining the spatial and sectoral aspects of this decline in more detail.

Two important spatial trends in London's manufacturing change have been determined. The first relates to sub-metropolitan manufacturing employment change. Dennis (1978) pointed out that a common assumption concerning London's manufacturing decline was that the inner-city was the primary location for employment loss. As mentioned previously, prior to the 1960s an inner outer distinction in London's manufacturing change had been observed, with the relocation and closure of inner London firms, and the expansion of manufacturing activity in outer London. Using DTI data on the opening and closure of manufacturing establishments within the capital which employed twenty or more people, Dennis described industrial change over the 1966 to 1974 period. He found that the dominant characteristic across London was the high rate of firm closure, but that the decentralisation of industry still accounted for a substantial 27% of total industrial decline. Dennis compared the performance of inner and outer London and demonstrated that the loss of employment from factory closures or relocation was only marginally greater in inner than outer boroughs. These conclusions were broadly corroborated by the GLC (1983) which used the same data sources to update the Dennis research to 1980. However, the GLC research also discovered that in contrast to the 1966 to 1974 period job loss, as measured in terms of absolute numbers and average yearly rates, was most marked amongst the outer London boroughs.

The method used in this research is open to criticism. The firms that were recorded in the DTI data were only those employing twenty or more people and as early as 1942 Forshaw and Abercrombie (1943) had pointed out that "for the county as a whole, the average number of workers per factory was only twenty, showing the small scale nature

London's industry. If the few relatively large factories were to be excluded, the average would be appreciably lower" (Forshaw, Abercrombie, 1943, 68). However, more recent research by LPAC (1988a) which considers employment change in sub-areas of London confirms the conclusions reached in the Dennis and GLC analyses. The general picture that emerges is one of overall manufacturing employment decline in the Greater London area. Regardless of slight variations over time, manufacturing decline is a feature of the whole London conurbation.

The second spatial trend in manufacturing relates to disparities in rates of change at the sub-regional level. Analyses of industrial change in the South East region have observed a general urban-rural contrast, with the rapid industrial decline of the Greater London conurbation on the one hand, and the much slower decline, and occasional small growth of manufacturing activity in the OMA and particularly outer South East on the other (Fothergill, Gudgin, 1982, 1983; Fothergill et al., 1985; Hall, 1989a; LPAC, 1988a; GLC, 1985; Hamilton, 1991). The discovery of this urban-rural shift, indicates that manufacturing employment decline often has a specific sub-regional spatial expression. As Fothergill et al. (1986) point out, the city is now the principal location of industrial manufacturing decline.

Hamilton (1991) examines employment change data for London, the OMA, and the outer South East for the periods 1975 to 1982 and 1985 to 1988. His figures show that while manufacturing employment declined by 27% in the OMA and by 25% in the outer South East between 1975 and 1982, the London manufacturing sector shed a much higher proportion of jobs, just under 40%. In fact for the 1985 to 1988 period, Hamilton shows that while manufacturing employment fell by 10% in London and by 4% in the OMA, employment actually grew in the outer South East by just over 4%.

Thus, despite the rapid decline of London manufacturing since the 1960s, the growth of manufacturing activity, or at least lack of decline in the Outer Metropolitan Area (OMA) and outer South East, has maintained the importance of manufacturing in the surrounding region (Buck et al., 1992). Hamilton (1991), notes that as recently as 1988, the South East region had up to one quarter of the total manufacturing employment of the country. There is therefore, an indication that a 'London' or 'city specific' factor may be at work in patterns of

industrial decline. However, it should be stressed that rates of manufacturing job loss in the South East region have varied over time as well as by area, and it would be wrong to suggest that all small towns and rural areas in the OMA or the outer South East have been free from industrial decline.

In terms of the sectoral composition of change in London's industries, the general pattern that appears to have emerged is one of overall sectoral decline (Buck et al., 1986; GLC, 1985). Buck et al. (1986) compared the industrial structure of London in 1961 to that of 1981 and found that employment decline was characteristic of all manufacturing sectors in the capital with little sectoral variation. They concluded that over the period 1961-81 "the tendency for London's share of national employment to decline was very general, with little evidence of systematic variations in trends at least amongst manufacturing industries" (Buck et al., 1986, 72).

Other authors have examined detailed differences between sectors in terms of rates of decline over time (GLC, 1983; LPAC, 1988a; Leigh et al, 1982). The GLC(1983) analysed employment data at the class level of the SIC (see appendix one) between 1961 and 1981, defining three broad periods of change. The first is between 1961 and 1971, over which a number of sectors could be identified as experiencing particularly severe rates of employment loss. These included instrument engineering; shipbuilding and marine engineering; vehicle manufacture; clothing and footwear; brick, pottery, glass and cement; and timber and furnishing trades. In fact employment in the first two sectors fell by almost three fifths over this ten year period. In the second period, 1971 to 1978, the rapidly declining industries of the 1961-1971 period were joined by coal and petroleum products; mechanical engineering; textiles; and leather goods. Over this duration these industries lost approximately half of their 1971 employment numbers. The final period defined was between 1978 and 1981, within which the GLC (1983) argued that with the sole exception of the paper and printing trade, the near collapse of every manufacturing sector was ensured by the rapid and increased rate of employment loss. In essence, the data showed that job loss had become much less sector specific from the 1970s onwards, eventually affecting all manufacturing industries in a most severe way.

However, the analyses of employment data outlined above have been conducted at relatively coarse levels of industrial disaggregation and may therefore mask some detailed sectoral growth. In particular, many authors have argued that the South East region in general has experienced the expansion of a very narrow set of 'newer' manufacturing industries associated with the high technology sector (Keeble, 1991; Jones, Wild, 1991; Hall et al., 1987; Henry, 1992; LPAC, 1988a; Buck et al., 1992). High technology industry is actually very difficult to define, and there has been no consistent definition found in the literature (Aydalot, Keeble, 1988; Keeble, 1988; Green A, 1991). Keeble (1988) argues that there are two main problems with any attempt at a categoric definition. First, the growth of high technology industry has obscured the distinction between manufacturing and services, and second, if high technology is defined as industries employing new technology then the criteria are constantly changing as new technology is consistently coming out on the market.

Hall et al. (1987) identified high technology sectors through the extent of industrial capacity employing scientific and technologically advanced products, and through the share of value added in R&D. On this basis they were able to define seven high technology sectors at the activity heading level of the SIC. These are : pharmaceuticals, chemicals and preparations; telephone and telegraph apparatus; radio and electronic components; broadcasting, receiving and sound equipment; electronic computers; radio, radar, and electronic capital goods; and aerospace equipment, manufacturing and repair. These sectors provide a useful working definition of the industries associated with high technology, generally those employing new technology in production or those producing technologically advanced products.

The expansion of the British high technology sector has been heavily concentrated in the South East region (Keeble, 1988; Hall et al., 1987, Henry, 1992). In fact Keeble (1988) shows that the South East "contained no less than 44% of total British high technology employment in 1984" (Keeble, 1988, 74). Greater London contains the largest concentration of high technology industry in Britain, however, growth has occurred in other areas of the outer South East and concentrations of high technology industry are to be found around the M4 corridor and Cambridge (Keeble, 1988; Hall et al., 1987). Much attention has focused upon the area surrounding the M4, described as a

"major suburban technopole" (Scott, 1988, 179), and thought to be the largest concentration of high technology industry outside Greater London. Essentially, this area, referred to as part of the 'Western crescent', represents the type of new industrial growth which has occurred in the South East, consisting of small inter-related high technology industrial establishments. Keeble (1991) argues that these types of industries are clearly growth industries in output terms and while other manufacturing sectors have declined, expansion of these sectors has steered labour requirements away from unskilled and semi skilled workers towards professional scientific and engineering groups.

Despite growth in the South East region as a whole however, even high-technology industries have been prone to job loss in the capital (Hall, et al., 1987). The Greater London conurbation suffered severe losses of high technology jobs despite the fact that it is still the biggest concentration of such jobs in the country. It should be stressed that the potential for job creation arising from the growth of high technology sectors is open to debate. Hall et al. argue that in employment terms "manufacturing is in deep decline, contrary to popular opinion, high tech is part of that decline" (Hall et al., 1987, 30). Nonetheless, spatial patterns of employment change in the South East's high technology industry again emphasise London's poor, and quite unique, manufacturing employment performance.

Consideration of these sectoral and spatial trends in London's manufacturing employment change highlights the extreme nature of industrial employment decline in the capital. The internal invariance in London's sectoral and spatial patterns of decline, and the comparison with the surrounding region suggests that the London experience is not a straightforward manifestation of national 'general' trends, but that there may be a 'London specific' factor at work, forcing the rapid and extreme decline of manufacturing industries. To quote Cowan and Gordon (1993) "what needs to be explained in London is not why some significant parts of the manufacturing sector have lost jobs, but rather why right across the board manufacturing employment has contracted both absolutely and (in almost all periods) relative to other parts of the country" (Cowan, Gordon, 1993, 26).

The final trend in the London economy to be discussed here is the growth in the importance of service sector activity. As mentioned in section 1.1, the service sector has been of considerable importance to the economy of the capital for many years. However, since the mid 1970s, over 70% of London's jobs have been in service industries and an expansion of employment occurred throughout the 1980s. Of course the service sector is not homogenous, and in fact many service industries have not experienced growth in London. For example, employment in warehousing, transport, and various activities connected with manufacturing and the London docks has declined in recent years. In the literature, attention has focused on the massive employment expansion throughout the 1980s in producer services, being those services whose products form intermediate inputs into other industries, (Gershuny, Miles, 1983), and particularly on financial and business services (Hall, 1989a; Keeble, 1991; Buck et al., 1992; Gordon, Harloe, 1991; Frost, 1991; Frost, Spence, 1991b; 1991c; 1993; Sassen, 1991; 1994; Buck et al., 1986; Kennedy, 1991).

Sassen (1991) analysed employment change data for London over the period 1978 to 1985. She showed that in two of the four service sectors defined at the division level of the SIC - the transport & communications sector, and education, health & other service industries - employment had declined between 1978 and 1985 by 18% and 10% respectively. Over the same period employment in public administration grew by 13%, however, the most impressive increase in the number of jobs was in banking, insurance and finance, with a 32% growth in employment over this seven year period. Frost and Spence (1993) provide greater sectoral detail for employment change in service industries in central London over the 1980s. They show that the largest rates of growth in employment were in banking and finance; auxiliary services to banking and finance; accountants and tax experts; legal services; computer services; professional services; house and estate agents; and 'other' business services. The implications from these, and other similar studies, is that the really significant expansions of service employment in London over the 1980s, and particularly in Central London, have actually been within a fairly narrow range of service activities (Frost, Spence, 1991b; 1993; Kennedy, 1991). Nonetheless, as Gordon (1995) and Buck et al. (1992) point out, this has still led to growth in a wide range of distinct functions including; commercial and investment banking, securities and commodities brokerages; insurance; real estate; R&D; cultural

industries; advertising; publishing; accounting; business consulting; communications including media; legal services; computer software services; and other services to business.

The literature documents a clear trend in the rapid expansion of tertiary activity in London and particularly that associated with producer services. However, services have always been an important element of the capital's economy. Why is it that the growth of certain service industries is now thought to have decisively shifted the economic base of London? Gordon and Harloe (1991) compared employment trends in banking, insurance, financial and business services to London's manufacturing sector. They found that by 1985, "net employment gain overtook net employment losses, and financial and business service employment overtook that in the manufacturing sector" (Gordon, Harloe, 1991, 379). Indeed the activities associated with producer services and finance and business services are now the only source of significant expansion in the London economy. Furthermore, the growth of these industries has been particularly prominent in London relative to other cities and regions throughout the UK, and some authors have indicated that London is a particularly important international location for the growth of advanced service functions (Sassen, 1991; 1994; Buck et al., 1992; Gordon Harloe; 1991; Jones, Wild, 1991).

This thesis is concerned with manufacturing activities in London rather than services. However, as will be discussed in chapter two, there are theoretical perspectives which draw important causal links between the growth of service industries and the decline of manufacturing. Thus, while the thesis will not focus on service sector growth, attention is still paid to these trends throughout.

This section has shown that since the 1960s, the dominant trends in London manufacturing discussed in the literature have been those of decline. Ignoring slight temporal variations, the indication is that industrial employment has fallen in all areas of the capital and in all statistically defined industrial sectors. Using terminology introduced in the next chapter, London has been, and is, undergoing deindustrialisation.

Chapter 2 : Urban manufacturing and structural economic change : theoretical perspectives and their application to the London case.

2.0 Introduction.

Chapter two reviews selected theoretical perspectives on economic change that have featured in the geographical literature. There are two main purposes. First, to provide a basis upon which the potential relevance of land use planning controls may be demonstrated in the next chapter. Second, and more generally, to present a substantive context at the outset which will later allow the empirical findings of this thesis to be considered in relation to relevant existing theories.

There is a considerable geographical literature that addresses issues of economic transformation, however recently, two broad preoccupation have been with structural economic change and deindustrialisation. It is on these two themes that the present chapter focuses, deliberately orientating the review in a selective fashion towards theories that have emphasised processes of manufacturing change and urban deindustrialisation. Where possible, previous research is drawn upon to highlight the relevance of the theoretical accounts to the specific case of London. The chapter has four main sections. The first considers definitions of deindustrialisation and structural economic change. Theoretical perspectives that have attempted to explain why particular economic changes affect advanced nations are then reviewed. Section three discusses detailed spatial aspects of economic change at the levels of the region and city. Finally, some conclusions are drawn.

2.1 Structural economic change and deindustrialisation.

There are no standard or universally accepted definitions of the terms structural economic change and deindustrialisation. Indeed disagreement in the literature even extends to the basic criteria that are used to detect these processes. It is not the purpose here to impose any specific meanings to these expressions, but simply, to illustrate the ways in which they are most generally used.

Structural economic changes have been described as economic changes which are not minor in character, but represent a fundamental shift in the whole direction and organisation of the economy (Allen, Massey; 1988; Harris, 1988). There is in fact no strict way to distinguish between a structural economic change or a minor economic change, however, it would seem that that substantial occupational, employment or sectoral output shifts in an economy are generally regarded as being structural. For example, studies concerned with structural economic change have typically examined implications arising from the decline of productive manufacturing and the growth of service sector activity within advanced regions and nations (Bell, 1974; Buck et al., 1992; Sassen, 1991; Savitch, 1988).

Given this broad description, it should be that manufacturing decline, or deindustrialisation, represents one facet of structural economic change. However, definitional problems exist even with the term deindustrialisation. Martin and Rowthorn (1986) for example, view it as an ambiguous expression which has been used in a variety of ways for both descriptive and analytical purposes in the absence of any consensus over its specific meaning. Cairncross (1979) offers clarity in this respect, putting forward some comprehensive, and subsequently widely cited, criteria for the detection of deindustrialisation. He suggests that the presence of four basic trends may be used to identify the existence of this process. The first is a straight-forward decline in manufacturing employment or output; second is a shift in employment or output from manufacturing industries to services; third is a declining share of trade in manufactured goods, such that the surplus of exports over imports is insufficient to maintain an economy in external balance of trade; and fourth is the progression of this last trend to a point where a country or region is unable to purchase the necessary imports to maintain manufacturing production, leading to further cumulative economic decline.

The four trends suggested by Cairncross are useful in describing and identifying deindustrialisation. However, they also highlight the different approaches that may be taken to observe the process, for example in terms of the measurement criteria used and the choice of spatial scale; or whether deindustrialisation is considered in isolation, or alternatively viewed in relation to the growth of other sectors of the economy such as services in a more causal interpretation.

There are then degrees of ambiguity surrounding the common use of the terms structural economic change and deindustrialisation and this is understood in the following review. The prime focus in this chapter is on theories regarding changes in manufacturing activity, and to this end, literature is reviewed which has framed these changes in terms of structural economic change or deindustrialisation, which has considered the processes at different spatial levels, and which has used different measurement criteria.

2.2 Why does deindustrialisation or structural economic change happen ?

This section reviews theories that address the processes underlying industrial manufacturing change at national and international levels, focusing in particular on the case of the UK. In this respect, the theories presented here could be considered as 'macro' perspectives relative to the urban and regional 'micro' accounts reviewed in section 2.3. The macro outlook may appear less directly relevant to this thesis which is concerned with manufacturing change in London. However, before going on to consider the reasons underlying the specific spatial manifestations of manufacturing change, it is first worth considering why deindustrialisation or structural economic change have happened to nations in the first place. It should be stressed here that space does not permit the wealth of empirical evidence of the actual trends experienced in particular countries to be reviewed. Rather, the quantitative detail of economic change outlined in the literature is taken as given, and the focus in this section is on the theoretical perspectives that attempt to explain why nations have experienced particular trends.

One of the first prominent comments on deindustrialisation was by Bacon and Eltis (1976) who explained Britain's industrial decline in terms of increasing internal deficiencies in economic structure. They argued that the observed shift from manufacturing to service employment, and particularly to public services, represented a serious 'structural' mal-adjustment in the British economy. Simply put, they suggested that the growth of non-manufacturing activities, and the related taxation required to fund some of these sectors, had starved the manufacturing sector of resources and employment leading to "growing numbers of redundancies instead of the increase in

employment and growth in the availability of resources that should have resulted" (Bacon, Eltis, 1976, 11).

Singh (1977) argued that Bacon and Eltis were too concerned with domestic economic issues alone, and that in an open economy such as the UK, deindustrialisation could only be considered in the context of interaction with the rest of the world economy. The author stressed that from the point of view of an individual country, the development of the world economy may be characterised by a changing balance between 'complementarity' and 'competitiveness' in manufacturing growth. Thus, "economic growth elsewhere is complementary to the extent that it raises demand for exports, but it may become 'competitive' insofar as it leads to the development of alternative sources of supply" (Singh, 1977, 117). Singh argued that Britain had lost competitive power because it had not held its share of world manufacturing markets, and had also suffered import penetration of the domestic market. Furthermore, he suggested that the British manufacturing sector was becoming increasingly inefficient, because it had failed to provide enough net exports to meet the country's overall import requirements at socially acceptable levels of output, employment, and exchange rates.

The issue of international 'competition' is prominent in more recent explanations of national deindustrialisation. It is thought that multi-lateralism has aided nation state economies in becoming less self-contained throughout the twentieth century, with increasingly intense economic competition occurring in a world rather than national market (Dicken, 1992; Sassen, 1991; Harris, 1988). Consequently, nation states are now more susceptible to multi-lateral trade in manufacturing products. These developments, however, have only opened the economies of nation states, they have not in themselves led to deindustrialisation. Harris argues that in the case of Britain, inherent weaknesses in the nation's manufacturing capacity were central to the industrial decline which occurred after the challenge was set by the growth of international competition in the post-war boom. These weaknesses included falling levels of investment in manufacturing, higher labour costs, relatively poor productivity gains in industry, and a lack of new product development.

Another important international influence on the fortunes of industrial activity in advanced nations has arisen from the growth of multi-national corporations and the movement of manufacturing capital across national boundaries (Massey, 1984; 1988; Dicken, 1992). With regard to industrial decline, the importance of this is that multi-national companies have the ability to reorganise the location of their productive capacity. It is thought that the high land and labour costs in advanced industrial nations, as well as trade unionism and labour protection, have resulted in the reorganisation of manufacturing away from these nations to newly industrialised and less developed countries, where cheaper labour can be utilised (Rodwin, Sazanami, 1989).

Other explanations have set out different, yet inter-related, processes which contribute to overall structural economic change (Keeble, 1991; Jones, Wild, 1991). Three such processes are often identified - deindustrialisation, reindustrialisation and tertiarisation. Reindustrialisation refers to the recent expansion of new forms of manufacturing activity, often termed high technology industries, being those characterised by their propensity to use products with important scientific and technological components and to make products incorporating substantial amounts of high value added research and development (Hall et al., 1987). Tertiarisation refers to the expansion of service sector orientated office activity, particularly within the specialist producer services (Gordon, Harloe, 1991; Hall, 1989a, Buck et al., 1992). Together deindustrialisation, reindustrialisation and tertiarisation are thought to be the dominant contemporary forces affecting advanced economies, creating the absolute or relative growth and decline of different economic sectors.

One of the main factors influencing this inter-related change is the shift in capital investment from less to more profitable activities, giving rise to the expansion of high technology and service sectors, and at the same time forcing the contraction of low technology manufacturing. Bluestone and Harrison (1982) raised the issue of the diversion of capital investment in the case of the USA, viewing deindustrialisation as a problem of dis-investment in productive capacity, particularly in relation to the 'flight' of capital from productive investment in American domestic manufacturing. Two other practical factors that are often used to explain these structural economic changes are the obsolescence and redundancy of older industrial plants, and an exhaustion in the

sources of traditional dynamic returns to scale (Harris, 1988; Rowthorn, Wells, 1987; Baron, 1992; Liston, 1992).

There are also more abstract theoretical accounts which attempt to explain why different components of economic change occur. Keeble (1991) points to three prominent perspectives - long wave theory, flexible production theory, and information economy theory.

Long wave theory developed in the work of economists Nikolai Kondratieff and Joseph Schumpeter proposes that economies undergo cyclical trends of industrial restructuring, separated by periods of economic slump and stagnation. The triggering mechanism for the economic 'booms' is thought to be technological development (Hall, 1985; Hall, Preston, 1988). However, the 'booms' described in long wave theory will not necessarily affect every country in the same way. Hall (1985) makes clear that "economic success lies with the country and the region and the city that innovate, that keep one step ahead of the action" (Hall, 1985, 5). Thus, Keeble (1991) argues that the economic decline of Europe's older industrial regions is a consequence of the long wave recession and industrial restructuring in Europe since the 1970s; while Hall (1985) associates the growth of high technology industry in America and Japan with a series of technological innovations in each country. In this way, national experiences of deindustrialisation and reindustrialisation can be understood by the ways in which the long wave cyclical trends affect particular countries.

The second theoretical perspective places industrial change within the context of a shift from a Fordist to post-Fordist mode of production (Algietta, 1979; Martin, 1988; Scott, 1988; Jones, Wild, 1991; Esser, Hirsch, 1989). Industries of the Fordist era are thought to be those associated with mass production, technical divisions of labour, and the exploitation of internal economies of scale, which were particularly important in Britain's dominant role as a specialised workshop in the 1950s. Post-Fordism has emerged, characterised by "a relative decline in the importance of Fordist mass production and an enormous expansion of manufacturing activity based on a less rigid and more highly adaptable methodological and institutional structure" (Scott, 1988, 171). The fall of the mass production sectors is often linked to international competition

from Japan and newly industrialised countries, problems of labour militancy, worker morale, and the rising costs of production, which slowed down productivity growth and eroded competitiveness (Martin, 1988). That is not to say that Fordism no longer exists, but simply that Fordist modes of economic organisation have fallen from their former leading role as the main component of economic growth (Scott, 1988; Martin, 1988). While Fordism was described as a mode of capital accumulation, post-Fordism is described as a mode of flexible accumulation. This is because, although varied, the new types of production that have emerged in the post-Fordist era are "generally characterised by an ability to change process and product configurations with great rapidity - an ability that is frequently much enhanced by the use of computerised technologies" (Scott, 1988, 174). Examples include the high technology industries, which have made use of technical innovation based primarily on micro electronics and information processing. Thus, this perspective essentially argues that deindustrialisation and re-industrialisation can both be explained by important transformations in the organisation of production.

The third theoretical perspective, information economy theory, is concerned with the relative growth of service sector activities in advanced industrial societies and particularly with producer services, which are broadly services whose products form intermediate inputs into other industries (Gershuny, Miles, 1983). The rise of service industries is often linked to changes in the overall composition of demand which are though to have arisen in the post-war period (Allen, 1988; Bell, 1974; Brown, Sheriff, 1979; Brown, 1988; Wood, 1986b). Two main sources of demand shift are usually cited. First, as average national incomes have risen and basic material needs are progressively met, so the demands of the general public have shifted away from consumer to durable goods, and then have extended to luxury items such as information services, education, health care, and the arts. The second demand source is from industry itself, which has increased its requirements for managerial, professional, and technical services in order to boost efficiency (Daniels, 1986; Corriat, Petit, 1991; Sassen, 1991; Lawrence, 1992).

The contribution of information economy theory to understanding manufacturing change relates particularly to this second source of demand shift. It is though that the

distinction that exists between manufacturing and producer services is becoming increasingly blurred. This is due in part to "'intermediate subcontracting' changes, in which activities that were (or might have been) part of the production process within one industry are subcontracted to an 'intermediate producer service industry'" (Gershuny, Miles, 1983, 249). Thus, as Hall (1987) notes "properly, these functions should be treated as part of goods-production employment. But because many of them are contracted to specialist organisations (advertising agencies, legal and accountancy offices, truck companies, airlines, etc.) they appear under services according to statistical conventions" (Hall, 1987, 5). In this respect tertiarisation and deindustrialisation are causally related through transformations in the organisation of production which are not detected in the statistical industrial classifications.

The final account of manufacturing change to be discussed in this section is by Rowthorn and Wells (1987). These authors put forward three hypotheses to explain why deindustrialisation has happened in the UK. Empirical evidence is provided which appears to support each hypothesis, however, the authors go on to present a balanced account of the underlying causes of actual manufacturing change in the UK. This text is an extremely important contribution to the deindustrialisation debate, describing many different aspects underlying national industrial change.

The first hypothesis presented in Rowthorn and Wells account is the maturity thesis. This asserts that the share of a nation's total employment in manufacturing will start to fall through the natural progress of economic development. Structural changes in the national economy are thought to be caused by relative sequential transformations in the structure of employment, as the expansion of one broad economic sector is associated with the relative contraction of another. For example, the declining share of agricultural employment was associated with an expansion in manufacturing and service labour; and when manufacturing growth stabilised, services continued to expand at the expense of agricultural labour, until such a small percentage of the workforce were left in agriculture that growth could only be achieved at the expense of manufacturing industry, whose share subsequently fell. The maturity thesis is framed in relative terms, and thus change in the absolute number of employees in any economic sector is dependent upon the performance of total employment.

The second thesis presented by Rowthorn and Wells is the specialisation thesis, which is concerned with transformations in the structure of foreign trade. Focusing on the economic history of the UK since the 1950s, the authors argue that the role as a manufacturing 'workshop' economy was not necessarily one the nation chose so much as it being an economic necessity. At that time the UK had a large deficit in non-manufactures trade, particularly due to food and raw materials import, and so required a substantial surplus in manufacturing trade. However, this no longer applies to the UK economy because huge improvements in non-manufactures trade have been found through cheaper imports of food and raw materials, increased domestic food production, reduced demands for raw materials, the discovery of North sea oil, and the rise in service sector exports. The authors point out that declines in the surplus of manufacturing trade over the post-war period need not due to the failure of manufacturing to compete successfully, but may be simply because the UK no longer has a huge deficit in non-manufactured trade, and as a result no longer requires a surplus in manufactured goods. Since the country no longer specialises in manufacturing, less employees and resources are devoted to these sectors.

The final hypothesis discussed by Rowthorn and Wells, similar to that put forward by Singh (1977), is the failure thesis. Under this account the decline of manufacturing employment is viewed as a symptom of economic failure, particularly the failure of UK manufacturing industry to compete internationally, or to produce levels of output adequate for a prosperous and fully employed economy. The failure thesis can be summarised in a number of propositions. First, that the UK's record in income and employment has been poor, and this is largely due to the weak performance of manufacturing industries. Second, that if the UK's manufacturing performance had been better then industrial output growth would have been higher, stimulating the non-manufacturing side of the economy and thus creating jobs and output in services and other non-manufacturing sectors. Finally, if the UK manufacturing output had been higher, then the severity of absolute and relative employment decline in UK industry would have been reduced.

Rowthorn and Wells present three viable hypothesis to explain deindustrialisation that can be applied to the UK experience. However, they conclude that "virtually all of the decline in manufacturing employment, both absolute and relative, is accounted for by two components : the maturity effect and the specialisation effect" (Rowthorn, Wells, 1987, 246). That is not to say that UK manufacturing has performed well, on the contrary, the authors do point out that internationally UK manufacturing has performed badly. However, the contention is that if Britain's industrial performance had been successful, almost as many manufacturing jobs would have been lost anyway due to maturity and specialisation. In this respect, the reduction in UK manufacturing employment is viewed as almost unavoidable.

The authors also draw a distinction between two types of deindustrialisation. First, is 'positive' deindustrialisation, which is the result of sustained economic growth where productivity in the manufacturing sector rises so rapidly, that regardless of increasing output, the labour demands of this sector are reduced. Unemployment, however, does not result because the rate of new service sector job creation is sufficient to absorb displaced manufacturing employment. 'Negative' deindustrialisation on the other hand, occurs when labour displaced from the manufacturing sector, due to output decline or productivity growth, will not be reabsorbed into the service sector resulting in increased and growing unemployment. On this basis they argue that the deindustrialisation of a nation does not systematically represent economic failure. However, in the case of Britain, the failure of manufacturing has resulted in 'negative' deindustrialisation.

This brief review of perspectives on why structural economic change or deindustrialisation occur has demonstrated the diversity of opinion that exists. Factors cited as being of importance include internal domestic economic conditions, government policies, international competition, changes in the composition of demand, changes in the allocation of resources between broad sectors of the economy and so on. Perhaps more importantly, it has been pointed out that deindustrialisation cannot simply be viewed as a kind of economic deficiency, and that in fact economic 'success' could lead to much the same outcome.

A final question exists over the extent to which deindustrialisation actually matters (Cohen, Zysman, 1987; Massey, 1988). Much has been written in the literature about this issue and the debate is largely polarised between two central issues on which opinions are based. First, the extent to which manufacturing is viewed as a necessary engine of growth, and second, the degree to which manufacturing is seen as a necessary basis of exports. For example, some authors have argued that the shift from manufacturing to services is the natural progression of advanced economies, and that service industry output is increasingly being traded internationally and is thus exportable (Baron, 1992; Lawrence, 1992; Liston, 1992; Eltis, Martin, 1992). Others have argued that a substantial core of service employment is tied to manufacturing, and that while some services may be exportable, the future export potential is simply too small to offset the large deficits in manufacturing (Cohen, Zysman, 1987; Bozen, Thirwall, 1992; Hughes, 1981). The issue is far from resolved and either side of the debate has produced empirical evidence on service exports which support each claim. This issue is of critical importance at a national level. However, as will be apparent from the discussion in the next section, the extent to which deindustrialisation matters for any local area is much more complex.

2.3 Spatial perspectives on manufacturing change : the deindustrialisation of the city.

It was mentioned previously that the specific orientation of this section is towards processes of urban manufacturing decline. As pointed out in chapter one, deindustrialisation has been shown to have had a specific sub-regional effect characterised by an urban rural shift. In general terms, a consistent pattern has been observed, where large cities within regions have lost manufacturing jobs at an extremely fast rate, while small towns or rural areas have often declined at a much slower rate, remained static, or actually experienced an expansion of manufacturing employment. The urban-rural shift has formed a major preoccupation in the literature reviewed and therefore represents an important focus in the discussion that follows.

For ease of explanation, the literature reviewed in this section is considered under six broad categories which pull together similar strands of argument. Some interpretations

may be consistent with more than one category, and it may be that several sub-categories could be created. Furthermore, many of the explanations reviewed here were not directly intended to explain deindustrialisation, but are included because they make a contribution to understanding the processes involved. The categories then, are not definitive, but hopefully provide some coherence to this review. Where possible, London based research has been used to highlight the relevance of the different interpretations of deindustrialisation.

Structural explanations.

The structural explanations have featured widely in the literature reviewed and are particularly associated with the work of Fothergill and Gudgin (Fothergill, Gudgin, 1982; 1983; Fothergill et al., 1985; 1986). The impetus behind Fothergill and Gudgin's study was the belief that spatial patterns of deindustrialisation could not be explained by traditional means; for example in terms of agglomeration economies, classical industrial location theory, or the concept of cumulative causation. They developed a 'structural explanation' of regional growth and decline in manufacturing activity based on three characteristics - industrial structure, urban structure, and the size structure of firms. Unequal Growth (Fothergill, Gudgin, 1982) observed a pattern of spatial economic restructuring in Britain that was more complex than a simple North-South divide and in which important inter- and intra-regional differences could be identified. The three structural characteristics defined by Fothergill and Gudgin have been discussed by other authors and are examined in turn below.

The central idea underpinning the industrial structure explanation of geographical differences in industrial performance is simply that the nature of industrial change in any area will depend upon its particular industrial mix and the proportion of this mix which is expanding or contracting in the national economy (Wood, 1991; Buck et al., 1992; Keeble, 1987). As Fothergill and Gudgin point out, "the growth of the market, international competition and technical progress do not affect all industries in the same way" (Fothergill, Gudgin, 1982, 48). Thus, variations in the performance of individual industries nationally are thought to yield an important influence over the geography of manufacturing change.

However, industrial structure has been largely dismissed as a single viable explanation for manufacturing change (Fothergill, Gudgin, 1982,1983; Goddard, 1983; Buck et al., 1986; Keeble et al., 1983). Using shift-share analysis, Fothergill and Gudgin (1982) have shown that for most UK regions the link between actual manufacturing employment change and the favourability of a region's industrial structure appeared tenuous. Several observations confirmed this conclusion. First, it was shown that the influence of industrial structure had diminished through time, largely due to the fact that employment was declining nationally in almost all manufacturing sectors, and hence rates of employment change had become much more alike. Second, it was discovered that even those areas with a favourable industrial mix had often experienced severe manufacturing employment decline, and this has in particular been a feature of results reported for London (Dennis, 1978; Elias, Keogh, 1982; Gripaios, 1977a; Buck et al., 1986; LPAC, 1988a). However, perhaps the most important finding was that industrial structure could not explain the differences between urban and rural areas in their manufacturing performance. At the sub-regional level, similar industrial structures were producing very different outcomes of change.

This led Fothergill and Gudgin to consider spatial patterns of manufacturing change at the sub-regional level. Along with several other authors, they observed that while urban areas have experienced severe manufacturing employment decline, rural areas and small towns have often expanded manufacturing employment. Furthermore, this urban-rural shift, as it came to be known, appeared to be spatially consistent. To quote Fothergill et al. (1985), "across the whole urban hierarchy manufacturing employment change has been related to settlement size, as a general rule, the bigger the settlement the greater the decline" (Fothergill et al., 1985). The fact that this urban rural contrast was not unique to the United Kingdom, and could be identified in almost all advanced industrial countries despite differences in macro-economic climate, implied that the relative economic decline of Britain could not explain spatial processes of manufacturing change. (Keeble, 1980; Keeble et al., 1983) It seemed that "urban decline may be both a cause and effect of deindustrialisation" (Goddard, 1983, 2).

Fothergill and Gudgin identified four main characteristics of this urban rural contrast. First, that industrial decentralisation played a minor role in urban and rural differences. Second, the location of expansion and growth, rather than the location of contraction, differentiated cities from small towns and rural areas. Third, it was found that the urban-rural manufacturing shift was more pronounced if larger rather than smaller firms were examined, and was also more easily identifiable amongst firms with higher capital intensity. Finally, a further important observation was that urban areas often experienced industrial trends in an inversely proportionate cycle to the rest of the country. For example, Buck et al. (1986) observed that when "manufacturing is contracting nationally, London's differential job losses appear to diminish and in times of general employment growth London tends to lag behind the rest of the country" (Buck et al., 1986, 67).

These observations provided a basis upon which industrial decline could be linked to the nature of the industrial environment. Fothergill and Gudgin (1982) developed a theoretical explanation, entitled the space constraint thesis, which cited the spatial structure of urban areas as a primary causal influence in the urban-rural manufacturing shift. They argued that employment densities, defined as the number of workers per unit of floorspace, had been falling over the post-war period as competition amongst firms has induced pressure to replace labour with capital. Specifically, they argued that the "pressures encouraging the introduction of new methods affect urban and rural localities alike, so that firms in all types of area experience a reduction in employment density" (Fothergill et al., 1985, 15). Over the same period the national demand for manufacturing land and floorspace had grown to accommodate the increase in capital use. However, because cities are densely built up environments where alternative uses compete for a fixed supply of land, Fothergill and Gudgin argued that they could not match the room for expansion in small towns and rural areas. Urban structure then was thought to play a restrictive role, since firms wishing to expand either have to forgo the possibility of growth or undertake production in an alternative location. In rural areas and small towns possibilities for expansion are much greater, and as employment losses are occurring through capital intensification, as indicated by falling employment densities, these losses can be more than offset by industrial expansion.

Applying this hypothesis to the Greater London conurbation it was argued that the proportion of factories with no room for expansion could be assumed close to 100% due to "the density of development, the high cost of land and the stringent restrictions on building on the edge of the greenbelt" (Fothergill, Gudgin, 1983, 29). Hence, they concluded that these physical constraints, against a backdrop of falling employment densities, could provide "a total explanation for the decline of London's manufacturing employment" (Fothergill, Gudgin, 1983, 39). Many authors have lent support to the urban constraint theory (Buck et al., 1986; LPAC, 1988a; Wood, 1986a; Gordon, Harloe, 1991; Cowan, Gordon, 1993; Keeble, 1983). In fact, Keeble (1983) found that the scale and degree of urban development was directly related to industrial employment decline throughout the European Community.

Two main criticisms may be levelled at Fothergill and Gudgin's space constraint thesis. First, it was empirically tested largely on the basis of employment data, and a decline in labour demand does not necessarily represent industrial decline. Fothergill and Gudgin did not address this issue and the urban rural shift was largely an employment based distinction. Second, a systematic description of the types of urban constraints in the built environment is missing from Fothergill and Gudgin's analysis. Fothergill et al. (1985) assumed that the possible impact of urban constraints upon the expansion of London firms was 100%, they did not, and possibly could not, provide empirical evidence to support this. Vacant land does exist in cities, and the majority of urban areas have industrial land for release controlled by city planning authorities. Also in rural areas and small towns, planning restrictions relating to greenbelt and countryside around towns may place important restrictions on the supply of land for industry. The possibility remains that land supply for industry may not be quite as physically constrained in every urban area, and quite as plentiful in small towns and rural areas, as Fothergill and Gudgin have argued.

The final 'structural' component proposed by Fothergill and Gudgin (1982; 1983) related to the size structure of firms. They argued that small firm formation has a good rate of job creation in the long and medium term because these types of firms tended to achieve substantial growth even after their very early years, and could be established in large numbers. Fothergill and Gudgin (1982) also found that rates of new firm

formation were higher in rural rather than urban areas. Spatial differentials in growth rates however were not entirely urban-rural, and the authors also found higher rates of formation declined rapidly as the proportion of employees working in large plants increased.

The 'structural' explanation, therefore, proposes that these three broad influences have been instrumental in causing the unequal growth of regions. A fourth factor, regional policy, is often also considered, however it has not been reviewed here as it is discussed under another category heading in this section. Two final points about this interpretation should be stressed. First, the three structural characteristics often combine to produce effects in a conflicting manner. London provides a good example. As mentioned earlier, industrial growth in London could have been assumed given its very favourable industrial mix. The space constraint thesis, on the other hand, would suggest that the capital should experience relative industrial decline. The second point is that the influence of each structural component on industrial decline is likely to vary over time. For example, the effects of industrial mix lessened over time as manufacturing employment decline rates converged for most sectors. Likewise, the influence of urban structure varies over time, being most effectual during periods of relative national economic growth. The implication of this is that the urban rural manufacturing contrast will be more prominent at some times than others (Fothergill et al., 1985).

Cost based explanations of manufacturing change

The cost based explanations seek to explain intra-regional manufacturing location, and the urban-rural shift, through differences in the costs of production. The argument is simple. To quote Keeble et al. (1983), metropolitan industrial decline can be linked to the "substantially higher operating costs for manufacturing in urban centres, with consequences for firm profitability, competitiveness and employment change" (Keeble et al. , 1983, 46). These higher operating costs are thought to exist in wages and salaries, factor rents and rates (Keeble et al., 1983), industrial land costs (LPAC, 1988a) (Scott, 1988), and transport costs (Fingleton, Tyler, 1990).

Much of the research into cost based explanations has focused on London. Fingleton and Tyler (1990) modelled industrial movement from London under the assumption that the individual firm will choose from a number of alternative locations to achieve maximum utility. Controlling for the 'known influences' on the movement of companies, which included geographic variations in industrial costs and the strength of urban and regional policy, the authors showed that companies leaving London and the South East over the period 1972-81 were attracted by the lower costs of alternative location, but only where these locations were in counties adjacent to London or the South East. Costs were therefore thought to vary between locations with important implications for urban industrial decline.

The conclusion reached by Fingleton and Tyler (1990) supports the findings of other London research. Keeble (1987) estimated that production cost differences between London and surrounding rural areas were equivalent to over 30 percent of gross profits for the industries studied. Cowan and Gordon (1993) found "substantial evidence that for a range of manufacturing industries labour, land, energy, and transport costs together are higher in London than in many other locations" (Cowan, Gordon, 1993, 26). LPAC (1988a) actually identified cost gradients for industrial land rents and rates and wages and salaries, finding gradients to be steepest in central London and falling gradually with distance outwards. The potential consequences of higher costs in London were argued to be the decentralisation of London manufacturing, and cumulative decline as the higher costs of London are absorbed within the firm, either through higher costs for goods which reduces competitiveness, or through a reduction in profit which results in less investment in the firm.

A number of criticisms of cost based explanations of urban manufacturing decline have been set out in the literature (Fothergill, Gudgin, 1982; Fothergill et al., 1985; Buck et al., 1986; Scott, 1982). It has been argued that within Britain costs do not vary substantially from place to place. In addition, cost variations themselves, with the exception of industrial land costs and property rentals, are not found to be systematically urban-rural. For example, labour cost in London may be high, but perhaps no greater than in the Rest-of-the-South-East (ROSE), and wages and salaries paid for manufacturing occupations often vary considerably within the same locality dependant on the firm. In

fact Scott (1982) even argues that demands for wage increases are likely to be higher in rural areas than in cities because these areas are not as accessible and so have a thinner local labour market and hence restricted supply of labour. It is also thought that transport costs now make up such a small proportion of total production costs, that access to motorway junctions in rural areas is unlikely to be a cost factor relevant to industrial location.

The importance of cost based explanations of deindustrialisation should not be disregarded. As Fothergill et al. (1985) point out, cost explanations, "cannot be ruled out. In certain areas and at certain times, it is likely that each plays a part in generating urban rural differences in employment trends" (Fothergill et al., 1985, 11). One of the main difficulties with cost based explanations is that difference of opinion exists over how costs actually vary spatially. If however, the studies which show systematic urban rural differences are correct, then cost based explanations may provide an important influence in urban deindustrialisation, particularly in terms of the location of expansion and growth which the structural explanation cited as the most important determinant of the urban rural contrast.

The changing influence of spatial external economies and labour supply factors.

Shifts in the intra-regional location of manufacturing can be linked to changes in the nature of spatial external economies, which in this context refer to economic benefits or dis-benefits which accrue to industry through concentration and spatial proximity. The most commonly discussed spatial external economies are agglomeration economies which describe the productive advantages of spatial concentration in urban areas resulting from scale economies (Mills, 1972; Richardson, 1978a, Vickerman; 1984). In much of the geographical literature it has been argued that urban agglomeration economies for manufacturing industries have largely disappeared (Wood, 1986a; Buck et al., 1986). In fact, other types of spatial economic externalities, agglomeration diseconomies, and what have been 'de-glomeration' economies, are thought to have emerged (Scott, 1982; GLC, 1983; LPAC, 1988a). The consequences are that cities no longer possess the operating advantages for manufacturing that they used to, and indeed non-urban areas may now offer a considerably better environment for industry.

The demise of agglomeration economies has been linked to such general trends as : the movement of skilled labour to the suburbs; the increased usage of roads rendering rural areas more accessible; increased congestion in established centres; and the disappearance of specialised suppliers and markets. These trends reduce the influence of forces which render manufacturing activity prone to agglomeration. Many London-based explanations for manufacturing decline have cited instances of how the influence of agglomeration economies may have changed to reduce the comparative advantage of the capital. Factors such as the size of London's population, the large pool of technical and skilled manual labour, the important market in London for craft production of consumer goods, the location of head offices and control functions, and the port of London are though to have provided an impetus for production activity to be located in close proximity (Buck et al., 1986; Gripaios, 1977a; 1977b; Kennedy, 1991; Leigh et al, 1982; Cowan, Gordon, 1993). However, as a result of technological advances in transport and industry "the role of these factors changed substantially, some largely disappeared, some provided a much less tenuous basis for location in London" (Buck et al., 1986, 60-61). As a result of this change in the 'pull' of agglomeration effects, manufacturing employment was displaced from London and the capital became less attractive for new investment.

The GLC (1983) went further, providing a list of specific metropolitan diseconomies, and what they termed de-glomeration economies. Amongst the metropolitan diseconomies they included factors such as : inadequate premises and sites; deteriorating city infrastructure; traffic congestion and problems of access; old and obsolete plant and equipment; high land costs, rents and rates; a shortage of appropriate labour; a high incidence of labour poaching; an unpleasant residential environment; and city planning restrictions. The de-glomeration economies offered in rural areas were thought to include : the availability of space; the availability of cheap land, rents and rates; access to skilled labour; government grants; and a pleasant residential environment.

However, the question remains as to why the nature of spatial external economies changed in the first place. In the literature, transformations in industrial production and

structure in the post-war era are often cited as important explanations (Buck et al., 1986; Hall, 1989a; Scott, 1982). It is argued that cross-industry interactions were central to agglomeration economies, so that the individual firm located not only near resources, but also close to other firms that could supply inputs to their productive processes. Through metropolitan growth, vertical and horizontal industrial linkages emerged, where the former represent the linkages of firms engaged in successive stages of the productive processes, and the latter linkage of firms producing inputs for other assembly industries.

Post war industrial change, it is thought, has transformed the nature of the productive process such that these linkages, and thus agglomeration, are increasingly unimportant for certain types of manufacturing. For example, Scott (1982) proposes a theory of intra-urban locational processes comprising two basic phenomena. First he describes a tendency for small labour intensive firms to cluster together at the centre of the metropolitan labour market for reasons of transport costs, industrial linkages, labour market accessibility, and the presence of a large market. Second, he describes a trend in large capital intensive firms to seek out cheap land inputs at relatively inaccessible peripheral locations. In this respect, Scott makes an important distinction between those firms which have 'escaped' the need for agglomeration economies offered in cities, and those firms which have not. The identification of these contemporary manufacturing locational processes reflect the observation made in Fothergill and Gudgin's work that small firms were relatively unaffected by the urban rural shift and that it was the most capital intensive firms that were prone to this contrast.

Other authors have pursued similar themes with respect to changing locational requirements that have arisen through reindustrialisation and the growth of high-technology sectors. As mentioned previously, reindustrialisation has been used to describe a broad structural economic shift, however it is also argued the growth of new manufacturing sectors may "generate their own spatial patterns, underlying the process of shifting industrialisation" (Jones, Wild, 1991, 5). For example, Hall (1985) argues that the locational requirements of high technology industries are very different from those of the traditional industries which located in older industrial areas. "New industries may positively seek to avoid older industrial areas" (Hall, 1985, 14) and one

reason for this is that older industrial cities have a number of disadvantages, including ageing infrastructure, a depressing physical environment, poor transport linkages, and a lack of innovative entrepreneurship.

Fingleton (1994) believes that London has undergone a process of 'delocalisation' in high-technology industry over the 1980s. He suggested in an earlier paper (1992) that the factors accounting for the distribution of high-technology industry are to a considerable extent the same as factors which account for the distribution of industry generally. To explain London's decline in high-technology jobs, Fingleton (1994) argued that London's particular high-technology industries were at a very mature stage of the product cycle and had much more in common with manufacturing in general, for which London was increasingly an unsuitable location.

However, it is not only the negative aspects of cities which determine spatial patterns of re-industrialisation. One of the most frequently cited factors affecting the location of 'new' growth industries are changing labour force requirements. The spatial distribution of reindustrialisation can be partly explained by the change in location of labour demand and supply, where firms, or disintegrated parts of firms, move from urban to rural areas to exploit the plentiful, highly skilled, mobile, and often less unionised and militant labour (Hall, 1989a; Keeble et al., 1983; Keeble, 1987). Industrial restructuring through productivity growth may have led to the depletion of many unskilled and semi skilled jobs. If so then the labour demands of industry are increasingly orientated towards skilled workers, and the location of this type of labour is thought to have shifted through trends of counter-urbanisation in the population.

Fothergill and Gudgin (1982) rejected the location of labour supply as a prime determinant in the urban-rural shift. They argued that two main difficulties arise in attempting to explain deindustrialisation in terms of labour supply and demand. First, that labour has always been available in the conurbations that have experienced industrial decline. Second, that levels of militancy and unionisation cannot be generalised across all manufacturing sectors since some industries are more strike prone than others. Furthermore, strike activity varies spatially, and while London's strike

activity was well below the national average the capital still experienced the most severe industrial decline.

The points raised by Fothergill and Gudgin still do not allow a dismissal of the importance of labour-related factors in relation to the industrial decline of cities. Although Fothergill and Gudgin argue that labour has always been available in the large conurbations, they do not consider supply in relation to the skills demanded by modern industry. The GLC (1983) survey cited shortage of appropriate labour as an important concern amongst industries in inner London, and cheaper labour was also shown to be an important factor in choosing a location outside the capital. Labour factors therefore may provide important components in the industrial location decision and hence may influence the distribution of industrial activity.

In addition to labour-related factors Hall (1985) cites access to the intellectual external economies of universities and R&D, and a high amenity physical environment, as important requirements for newer industries. The essential point is that changing locational requirements brought about through broad changes in the structure of industry may be central to the urban rural shift with re-industrialisation occurring outside the largest urban areas and around major infrastructure routes, while deindustrialisation continues at a severe pace in the cities (Hall et al., 1987; Keeble, 1991).

The changing nature of external economies provides an explanation for why manufacturing may not be tied to urban centres, and also why an urban rural contrast has been observed. However, the literature discussed here has often not been able to prove cause and effect and in fact the conclusions reached are not consistent with many other studies. For example, in the case of London, Crampton and Evans (1992) have argued that changing external economies cannot explain all of London's manufacturing decline because London has declined at such a faster rate than other cities. Furthermore, all manufacturing sectors in London have declined, yet there is little evidence to show that agglomeration benefits have been reduced in all industrial sectors. However, external economies do raise a number of issues that may be of importance in observed patterns of industrial decline.

The reorganisation of production and spatial changes in manufacturing activity.

The common characteristic of the following approaches to deindustrialisation is that emphasis is placed not on attempting to identify and then explain spatial processes of change but on understanding the social and economic restructuring processes underlying industrial change, and how these have been manifest in spatial patterns.

The first analyses of this type were associated with the 'political economy' or Marxist approach to economic geography. Massey and Meegan (1978) explored national trends in the reorganisation of capital in relation to the employment decline of cities. They regarded urban deindustrialisation as being part of the "wider phenomenon of contraction and change in the UK economy" (Massey, Meegan, 1978, 273). They distinguished between two major types of employment change at the national level - an absolute change, in which new jobs were created or disappeared altogether, and a locational change, in which the geographical location of production was shifted so that loss or gain was specific to a particular area of the country. They found that for the inner cities of Britain, the majority of jobs lost were due to either closure of firms or capacity cuts at the national level, with little locational change involved. The authors developed this research further examining different economic processes of intensification, rationalisation, and investment and technical change, which led to job loss (Massey, Meegan, 1982). This research was not city orientated, however, they argued that to understand the geography of employment decline generally, analysis would have to go beyond spatial patterns of employment change to the processes of production change which actually gave rise to job losses.

Perhaps the most prominent publication of the political economy approach is by Massey (1984). Again, this research was not city orientated and its methodological approach echoed the earlier works of Massey and Meegan. Massey argued that spatial and social processes were inseparable and that in "order to understand a spatial pattern we must go behind it and interpret it in terms of the structures and processes upon which it is based" (Massey, 1984, 67). Massey examined changes in the organisation of production and argued that one manifestation of these changes could be identified in new geographical

structures of production. Spatial aspects of deindustrialisation were documented, from patterns resulting from the old spatial divisions of labour which were based upon sectoral composition and contrasts between industries, to patterns based on the new spatial divisions of labour where the spatial structure of production of individual firms had become the dominant force in creating geographical patterns of industrial change.

With the exception of Massey and Meegan (1978) this research has had less to say about urban deindustrialisation. However, the importance of it is that spatial patterns of manufacturing change generally may be understood, not simply by specific locational factors, but by the reorganisation of production at levels above the urban-region. This is in contrast to other explanations outlined in this chapter which emphasise city-specific factors in decline. In particular, Massey and Meegan (1978; 1982) have stressed the deficiencies of research that dismisses the importance of national factors in terms of industrial structure. The use of employment data in regional shift share analysis they argue, excludes the importance of productive reorganisation at the national level as a structural influence and thus over-states the importance of 'locational' factors. For example, some areas such as London which appear to possess a favourable industrial structure, might still suffer from an excessive share of the declining or vulnerable parts of those industries.

The work of Markusen (1985) is also relevant to this broad category of explanation. Markusen was not specifically concerned with urban deindustrialisation but was instead seeking to explain historical trends in the economic and employment fortunes of regions. Adopting a long-term perspective, Markusen argued that the evolution of different industrial sectors through sequential stages of profit cycle was central to the spatial patterns of economic development arising from structural economic change, and also to contemporary regional disparities. For any industrial sector, Markusen identified five stages in the profit cycle. First, the zero-profit stage, which corresponds to the birth and design of an industry and is characterised by extremely low levels of output and employment, and by an extremely small number of firms. Second, is the super-profit stage, in which the new industries benefit from the absence of immediate competition and the possession of innovative edge, leading to the rapid growth of employment and output in a small number of firms. Jobs generated in this second stage will tend to be

within professional and technical occupations. Third, is the normal-profits stage, in which the entry of a sufficient number of firms into the market induces normal competition and the firms move towards cost reduction and seek optimal scale production. Output and employment will continue to grow over this stage, although at a slower rate than before, and increasing mechanisation favours a relative increase in managerial and production worker occupations as opposed to professional and technical jobs. The fourth stage is the normal-plus or normal-minus profit stage, in which either excessive oligopalisation sets in through firm closure and take-overs leading to a boost of profits for a small number of firms, or, excessive competition induces a reduction in profits. The former process may result in some job growth if output continues to expand, the latter will inevitably lead to some degree of employment decline through rationalisation and closure. Finally, is the negative profit stage, in which the industry experiences obsolescence, leading to the outright closure of plants and firms and excessive output and employment decline. Plant closure may be selective to some extent, particularly affecting older plants and those operating below capacity.

Markusen specifies typical sequential spatial patterns that arise at different stage in the profit cycle. Initially the industry will tend to be highly concentrated in one or a few localities, which, with the advent of super-profits, will emerge as agglomerations as the growing firms seek proximity in order to share skilled labour markets, locate near to innovative activity, be able to access new information, and be able to enjoy functional specialisation. Next, during the normal profits stage, firms will grow in size and diminish in numbers and there will be a strong tendency towards dispersion of parts the industry to market locations and also to areas with cheaper land and labour as cost cutting becomes necessary. This type of dispersion will generally lead to industrial expansion in regions remote from the original industrial core. In the fourth stage of the profit cycle, the dispersion trend may actually be retarded if oligopalisation sets in at an early stage in which firms are highly concentrated in a few regions. This is because the slowdown in the rate of growth of output may favour centripetal rather than centrifugal development patterns, due to a tendency to over-develop existing locations while slowing growth elsewhere. However, in later stages, it is likely that successful unionisation in established industrial regions will accelerate the dispersion of production. Markusen notes that when this latter trend occurs "hand in hand with cuts in

output or with significant new plant scale and technology, the aggregate spatial outcome will be relocation" (Markusen, 1985, 47). In the final stage of the profit cycle, corporations close down production or move to cheaper sites, in what Markusen refers to as abandonment.

Markusen argued that for any region, the stage of its industries in the profit cycle is of critical importance because factor availability and factor demand are not distributed evenly across regions, and thus particular localities are more or less attractive to industries dependent on their stage in the product cycle. As regards spatial patterns of deindustrialisation, the importance of this is that "the current growth experience in each region is a function of the point at which it became an original host for an industry. Regions whose major industries are now in the fourth or fifth stages of the profit cycle should be experiencing slow or negative growth and unemployment, while regions that have hosted first- or second-stage industries should be experiencing the opposite" (Markusen, 1985, 48). Markusen points out that any region should ultimately expect major industries to become job losers as they reach latter stages in the profit cycle. However, it is not only aggregate employment effects that may arise in this way. Profit cycles would also influence the occupational structure of regions, depending on the specific composition of labour demand at any point in the cycle for particular industries.

In this way, Markusen was able to explain the spatial pattern of manufacturing change and was able to approach the issue of deindustrialisation in the US regions, while rejecting previous explanations which had focused largely on the importance of spatial attributes alone. The author pointed out that the profit cycle framework is most relevant to those regions that are dependent upon a single or small number of industries, but the central message is that "the rise and fall of employment over time is a quite normal experience." (Markusen, 1985, 275) The importance of the explanation is the way in which it regards the spatial outcomes of economic change not as a primary function of geographical location, but as an expression of the interplay of forces determined through socio-economic non-spatial processes.

The third approach to be discussed in this section are the post-Fordist theoretical perspectives which were introduced in section 2.2 above. Again, these do not directly

attempt to explain spatial patterns of manufacturing change. Rather, they seek to describe contemporary processes of industrial restructuring in advanced industrial societies. However, two important components of this restructuring are relevant to geographical expressions of deindustrialisation. First, the decline of Fordism is thought to have a specifically spatial consequence evident in the deindustrialisation of cities (Martin, 1988; Esser, Hirsch, 1989; Scott, 1988). The emergence of Fordism caused industrial regions to grow across Europe within which urban agglomerations grew to house workers (Scott, 1988). The 'crisis' of Fordism is therefore seen as a 'crisis' of the Fordist settlement because cities were the centres of this type of economic organisation (Esser, Hirsch, 1989). The transition from Fordism to post-Fordism is ongoing, and as such the process of metropolitan industrial decline is also thought likely to continue.

The second spatial component of these theories relates to the location of new forms of production. It is argued that the types of flexible accumulation which have emerged in the post-Fordist era are not driven by internal economies of scale, but are characterised by vertical and horizontal disintegration of the productive process (Martin, 1988; Scott, 1988). As a result of this disintegration, external economies are thought to emerge through input output association, leading to the formation of 'new' agglomeration economies which have in turn induced the emergence of 'new industrial spaces' (Martin, 1988; Scott, 1988). These include both enclaves within older industrial regions, including many inner city areas with revitalised craft, clothing and furniture, but more importantly in divergent sun belts in former peripheral or semi peripheral zones bordering the old core regions of Fordist industrialisation. These two types of location are essentially the same as the pattern as that proposed by Scott (1982), and are consistent with observations made by Fothergill and Gudgin. In essence, some small industries are growing in the city within the overall context of decline, while at the same time the 'sunbelt' high technology capital intensive industries are expanding in more dispersed areas leading to an emphasis of the urban rural contrast.

The brief review of post-Fordism presented here has therefore raises two main points that are relevant to deindustrialisation. First, that the decline of manufacturing in the conurbations can be seen in light of changes in the organisation of economic activity.

Second, that new modes of economic organisation may play an important role in the urban rural manufacturing contrast.

However, a number of criticisms of the post-Fordist theoretical framework have been outlined in the literature (Lovering, 1990; 1991; Sayer, 1989; Harloe, Fainstein, 1992). Difficulties have been encountered in even attempting a comprehensive description of what Fordism or post-Fordism actually represent. The post-Fordism perspective assumes that the importance of Fordism is declining, but that in the present transition it still represents an important economic sector. However, Sayer (1989) points out that if Fordism consists of a labour process involved with moving assembly line mass production, then recent studies have shown it to be of minor significance, employing as little as 700,000 of the total UK workforce of 20.4 million (3.4%) (Sayer, 1989, 867). Other criticisms have been aimed at the assumption that Fordist industries are declining, and that post-Fordist industries represent a growth sector. Harloe and Fainstein (1992) argue that some industries based on the principles of Fordist organisation are actually growing. Furthermore, industries associated with post-Fordism such as the high technology sectors do not necessarily generate employment growth, and indeed often contribute to the process of deindustrialisation (Hall et al., 1987).

A further assumption implicit in the post-Fordist theoretical model is that the adoption of new technologies consistent with a flexible mode of production are widespread, and that new industrial spaces have emerged. In fact the adoption of new technologies is unlikely to be as common as is often claimed (Harloe, Fainstein, 1992). Lovering (1990) notes that "the GLC study of London industries found little evidence of any widespread move to flexible specialisation" (Lovering, 1990, 163). Likewise, the emergence of new industrial spaces and post-Fordist agglomeration economies are thought to have been very modest having little impact on the industrial geography of Britain's regions (Lovering, 1990).

When applied to the concept of deindustrialisation, limitations of post-Fordist theory become apparent. In particular, the idea of a move to a flexible mode of production cannot explain properly observed patterns of deindustrialisation. In the first place, this

shift may not have been evident to the extent that is often implied, and second, even those industries that have undergone the shift are part of the general trend of decline.

The global city hypothesis of manufacturing change.

The global city hypothesis has examined the changing position of some of the world's major cities within the overall urban hierarchy. Although the origins of the concept of global cities can be traced back to early work by Cohen (1981) and Friedman and Woolf (1982), Sassen (1991) provides the most detailed contemporary discussion of global cities. The starting point for her account of the new role for major cities in the world economy is the transformations in international economic activity since the 1960s, which have altered the structure of the world economy, creating the global dispersal of economic activity and the reorganisation of finance. Sassen argues that increased dispersal, along with continued economic command and control, have assumed forms specific to particular places. She says "Increased capital mobility does not only bring about changes in the geographic organisation of production and the network of financial markets. It also generates a demand for the types of production needed to ensure the management, control and servicing of this new organisation of production and finance" (Sassen, 1991, 23).

This demand is largely met in the world's major cities which contain the telecommunications and advanced services which are the key inputs required for global control. This concentration in certain cities is actually fed by the globalization and dispersal of economic activity, processes which have induced the centralisation of high-order activities in suitable locations. The argument therefore stresses that dual spatial processes of dispersal and concentration have been occurring within global economic restructuring, with the geographic dispersal of production and the internationalisation of finance on the one hand, and the concentration in major cities of functions required to regulate these financial networks and spatially dispersed production sites on the other.

Sassen looks at three global cities - London, New York and Tokyo - where massive and parallel changes in function and economic base can be identified. These cities are set apart from their provincial counterparts largely due to their share of international

financial flows, their high concentration of producer services, and their much greater global orientation. The same author (1994) argues that global cities now have more in common with one another than with their respective provincial centres.

In the present context, the specific aspect of the global city analysis that is relevant is the discussion of manufacturing change. While most global city analyses are not explicitly concerned with manufacturing, the reduction in its importance in the economy of major cities has received some attention. This is because pronounced declines in manufacturing employment have been observed in cities such as New York and particularly London; much greater declines than generally experienced in the provincial cities of the United States and Britain. The decline and counter-urbanisation of manufacturing industry are thought to be global tendencies, and global cities experience these tendencies in the most intense way.

Sassen (1991) argues that acute deindustrialisation in global cities can be explained by both general and specific factors. Generally, it can be linked to the decentralisation of manufacturing production from developed to less developed nations, the growth of international competition, declining productivity due to under-investment, and at certain times, foreign exchange rates that did not favour manufacturing exports. The specific reasons relate to aspects of intra-urban competition between activities, including inadequate space, higher land values, higher operating costs, constraints on expansion and so on. Sassen develops these specific reasons, explicitly linking the decline of urban manufacturing to the growth of the financial services, "one consequence of the extremely high level of profitability in the financial industry, for example, was the devalorisation of manufacturing as a sector' (Sassen, 1994, 18). Thus, it is argued that while the new international financial and producer services may not account for a large share of an urban economy, the possibilities for super profits in these sectors have the effect of 'crowding out' manufacturing through the re-valuing or re-pricing of certain economic activities and outcomes. "High prices and profits in the internationalised sector and its ancillary activities, such as the top-of-the-line restaurants and hotels, have made it increasingly difficult for other sectors to compete for space and investment" (Sassen, 1994, 50). The result is the downgrading and displacement of manufacturing, and a shift in investment from manufacturing to financial real estate.

However, crowding out may not affect all manufacturing sectors. Sassen (1991) argues that high wage and high value added sectors, such as printing and publishing, high technology sectors, and telecommunications industries, may be slightly less prone to decline in global cities. Furthermore, while unionised shops have declined acutely, it is thought that sweatshops and industrial home-working are still common.

Several recent analyses of London economic change have broadly adopted a global city framework (Frost, Spence, 1991b; 1991c; 1993, Buck et al., 1991; Harloe, Fainstein, 1991) in which the growth and decline of urban economic sectors are viewed as interdependent processes, often determined at a global level. Urban economic change, and the spatial manifestations of this change, are thought to be associated with the interaction of global processes giving rise to multiple economies within a single urban and regional space economy, and subsequently leading to competition for space and investment between different sectors of the economy.

The most important aspect of the interpretation of manufacturing decline expressed in the global city literature is therefore that it is a consequence of the growth of other sectors. Such a view is not exclusive to this particular literature. Previous explanations of urban deindustrialisation have often been founded on the concept of intra-urban competition, where manufacturing and service sectors are generally thought to compete in factor markets. As Hamilton (1991) remarks, "the deindustrialisation of London is a function of the inability of the materials-based sub system to compete for land, labour, services and infrastructure with the administrative information and finance service sub system" (Hamilton, 1991, 65). However, it is argued that while competition for space and investment between metropolitan activities has existed for many years, the global forces which induce the growth and decline of certain activities are thought to have intensified this process. (Harloe, Fainstein, 1991)

In sum, two related and specifically urban hypotheses of manufacturing decline can be defined within Sassen's global city framework. First, that the expansion of London's service industries is crowding out manufacturing in the capital because of competition

for space and other factor inputs to production. Second, that certain manufacturing sectors may retain a comparative advantage by maintaining their operations in London.

Policy-related factors in deindustrialisation.

Finally, it is worth considering the effects of policies pursued by successive central and local governments. These are often thought to have influenced the scale and location of industrial activity at the inter- and intra-regional levels. Some policies, for example regional policy, have been formulated with the specific intention of influencing the distribution of industrial activity. Others, such as Comprehensive Development Area (CDA) procedure and New Towns policy, may not have been specifically intended to do so but have often had implications or outcomes in terms of industrial location and decline. It should be stressed here that policy-related factors cannot explain the underlying structural changes associated with deindustrialisation and are treated here as complementary factors rather than as fundamental causes.

Under British regional policy, 'negative' and 'positive' controls over industry were established to steer industry away from London and the Midlands towards the depressed areas of Britain, classified as assisted or development areas. The substance of these policies is described in Armstrong and Taylor (1985), Diamond and Spence (1983) and Hall(1989b). Regional policy has been modified considerably over the years, and to some extent still exists today though in a very much diluted form, and the link between regional policy and industrial decline is relevant only in relation to certain areas of the country, and here the focus is on the London effect.

Two main effects of regional policy are often cited in relation to the industrial decline of London. First, is that firms may have moved away from London as a result of policy, and second, that the number of firms that would have located in London would have been larger, had regional policy not been exercised.

Research undertaken by Dennis (1978) and updated by the GLC (1983) considered the impact of regional policy on London. Dennis concluded that over the period 1966-74, only "9% of total employment decline (could) be attributed to movement to assisted

areas by London firms" (Dennis, 1978, 67). The GLC (1983) found that over the period 1976-80 the majority of London's job loss was associated with moves to non development areas. In fact, it would appear that in terms of industrial movement regional policy has been a marginal influence. The assisted areas did not induce movement of London firms to any great extent, and South East destinations are thought to be associated with nearly 33% of London's total job losses over the period 1976-80 (GLC, 1983).

This still leaves the second policy effect defined above, the issue of how many jobs would have located in London in the absence of regional policy. Clearly, this is a very difficult effect to identify, and no specific research on this policy impact has been reviewed. However Buck et al. (1986) argue that this effect had a very minor impact, since "arguments advanced for decentralisation tend to suggest that companies would have ended up in the OMA anyway" (Buck et al., 1986, 75). This raises an important point about the effects of regional policy - they are not capable of explaining the urban rural manufacturing contrast. Until the 1980s, regional policy did not make a systematic distinction between urban and rural areas. Keeble (1980) notes that assisted area counties were dominated by rural areas, whereas non assisted areas were made up of chiefly urbanised areas. However, he found that it was rurality, not assisted area status, that was the prime factor influencing the pattern of industrial movement. The suggestion is that spatial trends in industrial decline were taking place despite the operations of regional policy, and this is supported by the fact that an urban rural shift can be observed in both assisted and non assisted areas (Fothergill et al., 1985; 1986; Fothergill Gudgin, 1982; Goddard, 1983).

Most authors argue that regional policy has had only a marginal impact on the industrial decline of London (Elias, Keogh, 1982; Gripaios, 1977a; 1977b; Goddard, 1983; Buck et al., 1986). Fothergill and Gudgin (1982) demonstrated this argument by showing that the total level of movement from London was no higher in the 1960s and early 1970s, when regional policy was active, than it was in the 1950s when it was not. Deindustrialisation and the urban rural shift occurred independently of regional policy, and this is consistent with the finding that other European countries experienced much

the same trends in circumstances in which regional controls were not as sophisticated as those in Britain.

There are many ways in which urban planning policies could influence spatial industrial change. Mention has already been made earlier about the potential effects of greenbelt policy in terms of urban space constraints. Within the literature, attention has been focused upon policies relating to CDA procedure and planned decentralisation. Planning policies of the 1960s and early 1970s were aimed not only at the decentralisation of population, but also industrial manufacturing. As Dennis (1978) pointed out, "it was argued and is still is argued by some that this (industrial) decline would facilitate an improvement in environmental conditions, particularly housing conditions" (Dennis, 1978, 63). The Greater London conurbation was the subject of the most intense urban policy (Dennis, 1978, Fingleton, Tyler, 1990) of which two main effects upon industrial decline may be defined. First, a 'push' element, where redevelopment programmes of local authorities pushed industry out of the inner city. Hebbert (1991) argues that the housing policy pursued by the GLC, which focused on redeveloping the inner city contributed to economic decline through "the extinction of manufacturing activity within the nineteenth century street" (Hebbert, 1991, 107). In addition to comprehensive redevelopment, development control policies pursued by local authorities often inhibited extensions to existing premises and sites (Dennis, 1978). Second is a 'pull' element, which the attraction of new towns and overspill towns often having new factory floorspace, provided.

Research undertaken by Dennis (1978) into industrial decline in London, found that the second potential effect of urban policy, the pull element of new towns, could only account for 7% of the decline in manufacturing employment over the period 1966-74. However, Dennis argued that the CDA procedure and development control policies pursued by local planning authorities had been instrumental in the industrial decline of London. Dennis shows that in some areas up to as much as 23% of factory demolition can be attributed to redevelopment. The negligible importance which Dennis accorded the pull element induced by new and expanded towns has been disputed by more recent studies (LPAC, 1988a; Fingleton, Tyler, 1990). However, this particular effect is extremely difficult to quantify or examine.

Deindustrialisation and the urban rural contrast cannot be explained solely by the effects of planning policies. Despite policy changes in the 1970s, aimed at regenerating urban areas through employment and population growth, the industrial decline of cities continued even though decentralisation was not encouraged and new town development was phased out. Furthermore, planning policies pursued since the 1970s have often been in conflict with patterns of deindustrialisation since the growth of industry in small towns and rural areas is frequently discouraged.

2.4 Conclusions.

This chapter has reviewed contemporary theories on why deindustrialisation and structural economic change happens to advanced nations, and it has shown that processes underlying observed spatial patterns in manufacturing change have been theorised in many different ways. One consistent aspect in the theories reviewed is the focus on severe absolute and relative urban deindustrialisation. In the perspectives outlined above, manufacturing in cities is largely viewed as being in terminal decline, and the explanations have not emphasised the importance of manufacturing in cities today. Cities it would seem are no longer viable locations for manufacturing industry.

The review of this literature provides a context based in existing wisdom within which results generated in this thesis can be understood. It also provides a background against which the importance of planning controls for urban manufacturing change can be demonstrated, and it is to this task that the next chapter turns.

Chapter 3 : The planning system and manufacturing change : land use regulation and deindustrialisation.

3.0 Introduction.

The following chapter demonstrates the potential importance of land use planning controls for manufacturing employment change in London and illustrates the relevance of such controls with respect to the theoretical perspectives reviewed in chapter two. The chapter begins by defining the scope of land use planning that is of concern in the thesis. Section 3.2 then provides a discussion of the general significance of planning for land use change. The chapter proceeds in section 3.3 to consider the pursuit of 'employment protection policies' by LPAs, and to emphasise the importance of these policies for manufacturing employment by reflecting on some recent deregulation measures made to the planning system. The substantive and theoretical relevance of employment protection policies are then outlined before conclusions are drawn in section 3.5.

3.1 The scope of land use planning considered in the thesis.

It is important at the outset to define the scope of 'land use planning' considered in this thesis. A wide spectrum of activities may conceivably be defined within the general concept of planning, many of which are not provided for in the principal Town and Country Planning Acts. These could range from the economic development or housing initiatives undertaken by local authorities, to the activities of Urban Development Corporations, New Town Development Corporations and National Park authorities (Bruton and Nicholson, 1987). In this thesis, the concern is with the activities of borough planning authorities in London over the 1980s within the statutory land use planning system which has been established since 1947, and in principal comprises the two related components of development plans and development control. As this chapter will show, the main substantive focus is on if, and how, London Borough LPAs have used development control powers to protect manufacturing jobs. The borough LPAs are not the only agents that have been involved in the planning of London over the 1980s, however, they are those most directly involved in the control of development within

London, and thus are the authorities best placed to actually manipulate development control powers towards defined objectives. It is therefore not by choice that the focus is on statutory land use regulation at the borough level, but because it is through this means that the policies to be examined in this thesis are executed.

The arrangements for land use planning in London over the 1980s, although unique in terms of the institutions involved, essentially comprise the same basic components as the British planning system generally. Several authors have provided excellent, and subsequently standard, accounts of British planning at various stages in its evolution. These range from discussions of the statutory and administrative frameworks and general practices of town planning (Cullingworth, Nadin, 1994; Ratcliffe, 1988; Rydin, 1993; Hall, 1989b; Nuffield, 1986), to studies of more specific planning functions (Bruton, Nicholson, 1987; Healey, 1983; Healey et al., 1988; Glasson, 1978), to the technical accounts of the actual changing legal framework which permits the practice of Town and Country Planning (Grant, 1982; Grant, Heap, 1991; Heap, 1991; Purdue, Young, Rowan-Robinson, 1989; Telling, Duxbury, 1993). This literature is relevant to the London case, however, recent discussions of the arrangements specific to London may be found in Simmie (1994), Burnham et al. (1992), Gowling and Leith (1988) and Hall (1989a). Space does not permit a general discussion of the London planning system in this chapter, however a summary is provided in appendix two. It is considered far more useful here to focus on explaining why planning is important, rather than how it is conducted and administered in London, and the general discussion of the importance of land use planning and the description of employment protection policies that follows, adequately illustrate the issues that the thesis seeks to examine.

3.2 Planning and land use change : some general considerations.

The powers of development control enacted under the planning legislation allow LPAs to directly intervene in the ways in which land is used. This section seeks to demonstrate that these are considerable powers, which have major consequences for the composition of land uses in any area as well as for the actual value of land itself. The first main issue to be addressed concerns the fundamental effects that planning intervention may have. A useful starting point here is to outline the general rationale for

intervention in the land and property market. The very existence of intervention implies that it has some importance, and discussion on a basic theoretical level provides a frame of reference within which one can understand the specific policies considered in this thesis.

The rationale for intervention in the land and property market has received a great deal of attention in the literature (Webber, 1969; Litchfield, 1979; Litchfield, Darin-Drabkin, 1980; Harrison, 1977; Evans, 1985; Willis, 1980; Whitehead, 1983; Klosterman, 1985; Lee, 1981; Vickerman, 1984; Jensen-Butler, 1995). Essentially, the basic argument is that in the absence of a perfectly competitive market and an equitable distribution of resources a free market in land and property would be unlikely to allocate land to its most 'efficient' or desirable use. In fact it is thought that a number of 'market failures' would be likely to emerge in the free market which some form of intervention may be able to correct.

These market imperfections may take several forms. Those most commonly cited include negative externalities, the failure of supply of 'public goods' and 'merit goods', and the inequitable distribution of resources. It is worth briefly illustrating the relevance of these types of 'failure' with respect to the land and property development market. Negative externalities refer to external costs which arise from acts of production or consumption but are borne by those not directly involved in the decision to produce or consume. The most frequently cited example of a negative externality is that of pollution, and examples of locational negative externalities which could arise in a free land market situation would include the potential impacts of new development, particularly in relation to a loss of visual amenity, privacy, or the general quality of the built or natural environments; traffic congestion; noise; and incompatibility in proximate land uses.

The failure in supply of 'public goods' would arise from their two distinguishing characteristics. First, that consumers cannot be excluded from using these goods, and second, that the amount of the good consumed by one individual in no way diminishes the amount consumed by another. Under these conditions a competitive market fails to provide any incentive for the individual private supply of these goods as the efficient

price is zero. Examples of public goods include urban parks, public-infrastructure, street lighting, un-congested roads, and local administration. In fact Evans (1985) points out that the town plan itself may be considered a public good.

A third imperfection that may emerge under free market conditions is in the under-provision of 'merit goods', which may be defined as goods in which consumption by all individuals will increase the utility of society as a whole. In the context of the land market the specification of minimum standards of amenity, open space, building design, and the layout of built form may be regarded as merit goods.

The final example of imperfection in a free market situation is the inequitable distribution of resources which may often arise. Examples of corrections to distributional problems through intervention in the land market could include the allocation of housing and employment land uses to more deprived areas, the improvement of quality of life in inner-cities, the aim of achieving an even spatial distribution of certain basic land use resources, or a general presumption in favour of land use activities which will maximise welfare utility within any given area.

The four examples outlined above are sufficient to demonstrate the problems that may arise under free market conditions in land and property development. Other instances of market failure outlined in the literature include the creation of natural monopolies yielding excessive market power and the lack of long term information deriving from individual decision making. The important point is that the principle upon which land use intervention is often justified is that these failures may be corrected, or at least reduced, by allowing the state to influence the spatial location of resources. Theoretically intervention could take several forms including taxation, subsidies, regulation, direct ownership and participation in urban investments, and by intervention in related markets such as labour markets, construction material markets, and the like (Lee, 1981; Whitehead, 1983). One of the most common types of government intervention adopted in advanced industrialised countries has been through regulation in the form of established governmental land use planning systems. Reasons for the predominance of this form of intervention are thought to include its superiority in dealing with locationally specific problems relative to non-locationally specific taxes

and subsidies; the ease of enforcement of regulations; the costs of establishing tax based systems; and the general effectiveness of controls (Evans, 1985; Whitehead, 1983).

The regulation of land use in Britain is principally conducted through the control of new development. The development control system, as established under the Town and Country Planning Act 1947, is in effect the foundation of the British planning system, establishing the requirement that with certain exceptions, planning permission be obtained from the appropriate authority before development may be undertaken. It has provided the critical basis upon which development plans may be implemented and land use change regulated by planning authorities to realise planning objectives. The scope of development control is set out under the relevant planning legislation. Under section 12 of the 1947 Act development was defined as the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any building or other land.

Thus, the town and country planning system contains powers to control the use of land, and unlike forms of intervention which utilise taxation or subsidy, planning regulations are not conducted through direct monetary transactions. However, the importance of planning controls can be clearly demonstrated by their effects on land values. According to urban economic theory the main mechanism underlying patterns of land use in the absence of intervention in the urban land market would be the pricing system of land, such that land would generally be used by activities that could pay the highest rent (Evans, 1985; Vickerman, 1984; Harrison, 1977). Ultimately the demand for land would be dictated by the utility or economic return which could accrue from its use. Grant (1982) puts it thus, "land has a value for development to an intending purchaser in accordance with its likely profitability, which is in turn determined by the likely demand for the completed development, or, in the case of industrial premises, for the goods to be manufactured therein" (Grant, 1982, 16). Land use change would occur "as soon as there is some possibility of a prospective use attracting a potential value that is higher than the current use value" (Lichfield, 1979, 114). Evans (1985) points out that even in the free market situation there would be complications which may hinder this smooth process, particularly in relation to land hoarding, the comparative profitability of re-developing sites, and problems of land transfer. However, in broad terms land use

change in the free market situation would be likely to driven by pricing mechanisms, and be characterised by the sequential occupation of land by increasingly higher value uses such as indicated by bid-rent theory (Vickerman, 1984).

In this respect, it can be argued that land has two distinct values - the existing use value and the development value. In fact, this distinction has traditionally influenced the approach to land values in town planning legislation (Purdue, Young, Rowan-Robinson, 1989, Heap, 1991, Grant, 1982). In the planned city however, the development value of land is regulated and thus the operations of market are hindered. In relation to planning controls, the most frequently cited land value effect is that which arises through restriction of supply of land for some uses, for example, housing. As Parry-Lewis (1979) remarks, "as a general point we may observe that if the supply of anything is reduced while the demand for it is constant or rising, then its price is likely to rise" (Parry-Lewis, 1979). Thus, in the case of restriction in the land supply for housing land permitted for this use would hold a higher value than it otherwise would. As Evans (1985) points out, planning permission for use change is valuable and in fact could be equal to the difference in the value of the land in one use rather than another. In the case where land is restricted to a particular type of use the development value of this land will be diminished as higher value uses could not be conducted on the site. This would have the effect of providing no incentive for the redevelopment of the site to agents in the property market process.

The general effects of planned intervention would be a very uneven land value surface with sharp differences between different uses, and the pattern of land use change very different from the relatively smooth distribution expected under the free market situation (Harrison, 1977). To quote Parry-Lewis (1979), "in towns where there is public intervention in the use of land, both the pattern of land use and the market price of land are different from what would otherwise have been; and every public decision permitting, forbidding or ensuring some change of use is likely to affect the value of that land and other land" (Parry-Lewis, 1979, 177). Examples of the potential effects of planned intervention upon land values and the implications for patterns of land use change are discussed widely in the literature (Lichfield, Darin-Drabkin, 1980; Harrison, 1977; Parry-Lewis, 1979; Darin-Drabkin, 1977).

Land use planning can therefore be conceptualised as a means of intervening to correct the market failures thought to be characteristic of a free market in land and property, and through regulation, it has extremely important implications for patterns of land use and for the value of land itself. The land use planning system is frequently regarded as being a most stringent form of market intervention. Reflecting upon the implications of the introduction of the 1947 Town and Country Planning Act, Grant and Heap (1991) remarked that "from the point of view of the local planning authority, the landowner or building developer, the 1947 Act contained some of the most drastic and far-reaching provisions ever enacted affecting the ownership of land (which for this purpose includes buildings) and the liberty of an owner to develop and use his land as he thinks fit. Indeed, after 1948, ownership of land, generally speaking, carries with it nothing more than the bare right to go on using it for its existing purposes"(Grant, Heap, 1991, 10002).

So far this section has considered land use planning from a very general theoretical standpoint to demonstrate the fundamental effects that this form of regulation may have for land use change. Many authors have explored the impacts and implications of town and country planning controls in a more practical way demonstrating that by intervening in the land use and development market, particularly by means of development control, local planning authorities have an important influence on the composition of activities within their areas (Evans, 1985; 1988 1991; Cheshire, Leven, 1982; Harrison, 1977; Adams, Russell, Taylor-Russell, 1994). These types of studies have focused on specific aspects of planned intervention such as greenbelt and housing policies. However, the practical effects of planning controls, particularly in relation to economic activity, has been discussed widely and in a more general sense over the 1980s as the Conservative administration have sought to curtail the scope of planned intervention through deregulation. The arguments put forward by the government, and by the commentators who supported the deregulation of the planning system are worthy of consideration here, as they demonstrate how important land use regulation is perceived to be.

The deregulation of the planning system initiated by the Conservative Government in the 1980s has been widely documented in the literature (Thornley, 1988; 1989; 1991;

Lloyd, 1986; Brindley et al., 1989; Hall, 1988; Healey, 1989; Nuffield, 1986; Barnekov et al., 1989). Drawing upon experience from the USA, the government concluded that "the clear indication is that deregulation stimulates economic activity" (GB Minister without Portfolio, 1985, 9). In particular, the Town and Country Planning system was viewed as a burden on enterprise and on job creation. The government acted by making several modifications to the planning system including; the introduction of enterprise zones, simplified planning zones and urban development corporations; the restriction in the scope of development plans; the extension of permitted development under the GDO; and the modification to the UCO. The specific measures taken to deregulate the system are not of paramount interest here. What is relevant is that planning was seen to be an important form of intervention, particularly as regards economic issues in the criticisms and challenges that underpinned the rationale for deregulation.

The conservative government initiated many of the deregulation measures made to the planning system, however, town and country planning had been widely criticised before 1979. In the 1970s and 1980s, a number of bodies in both Britain and America began to challenge the post war consensus upon which planning, like other facets of the welfare state system, had been based (Ambrose, 1986; Brindley et al., 1989; Thornley, 1991; Hall, 1988). Much of this criticism was aimed at the failure of planning to stem the economic decline of cities and at the production of poor living environments in the post war new towns and estates. However, the principle of land use regulation itself, as established in the 1947 Act, was also widely criticised for apparently playing an important role in stifling economic growth, dampening private sector initiative, and inhibiting wealth creation. Given the context which emerged following the economic crisis of the early 1970s, planning regulation was seen by many as an inappropriate mechanism to guide economic change. To quote Hall (1988) "Planning - so the radical right alleged - had distorted and inhibited the operation of market forces, forcing industrialists to take sub optimal location decisions and even throttling entrepreneurship" (Hall, 1988, 346).

From the early 1980s, Central Government introduced a number of modifications to planning controls and to the institutional arrangements that were established to undertake such controls. The rationale behind the governments program of deregulation

in the planning system was fully documented in the 1985 white paper 'Lifting the Burden' (GB Minister without Portfolio, 1985). Following the modifications made to the planning system in the early 1980s the 1985 white paper reinforced the government's commitment to reducing unnecessary constraints on the creation of jobs and wealth. The white paper argued that deregulation would stimulate economic activity, and it stressed two important aspects to deregulation. "Deregulation means two things. First, freeing markets and increasing the opportunities for competition. Second, lifting administrative and legislative burdens which take time, energy and resources from fundamental business activity" (GB Minister without Portfolio, 1985, 1). Regulations were therefore seen as a constraint on enterprise, and while some were recognised as being relatively minor, it was their cumulative effect that was considered damaging.

In particular, the Town and Country Planning system was seen to be imposing "cost on the economy and constraints on enterprise that are not always justified by any real public benefit in the individual case" (GB Minister without Portfolio, 1985, 10). The government felt that the planning system was creating delay and uncertainty and also had not changed much since 1947, and that "the very wide discretionary power that the system affords is used to apply excessively detailed and onerous controls of a kind that would not be tolerated in the general legislation" (GB Minister without Portfolio, 1985, 10). The white paper proposed the abolition of 'unnecessary controls' and the objective of achieving simplicity and efficiency in the way that necessary control is carried out. Circular 14/85 which accompanied the white paper expressed similar sentiments and also stressed that in development control decisions the presumption should be in favour of development and that the planning system should respond positively and promptly to proposals for development (DoE, 1985, 20). The government clearly felt that town planning controls were of a very onerous nature and could have an important impact on economic change.

The arguments presented in 'lifting the burden' were extended into mechanisms for achieving deregulation in a second white paper, 'Building Businesses.....Not Barriers' (DoE, 1986a). Again the government argued that the apparent success of the USA in job creation and in stimulating economic activity could be explained not only by extreme

entrepreneurial spirit, but also by the existence of a less restricted business environment. The 1986 white paper outlined four mechanisms for removing unnecessary controls. First, by reducing the scope of control where the type and scale of development does not warrant the need to make a planning application. Second, by simplifying the system where it is more complicated than it needs to be to meet its objectives. Third, by increasing the efficiency of the system by improving performance on planning applications and appeals. Finally, by requiring the system to adopt a more positive approach so as to facilitate development and renewal wherever that is possible and consistent with other objectives. The rationale behind the deregulation of the planning system was to stimulate economic activity and generate wealth creation. First, through allowing development to proceed unless it would cause demonstrable harm to interests of acknowledged importance. Second, by reducing the administrative and time consuming burden of planning controls on business. More fundamentally, the modifications to the planning system would render planning more sensitive to the market and with certain particular qualifications, give market criteria a greater say in the development and use of land.

Thus, land use planning, principally through the mechanisms of development control, is widely considered to be an important form of government intervention. It has been argued in this section that the powers of development control offer a significant means of control over the composition of land use in any area, and that this in turn may have implications for economic change. Why is this relevant to manufacturing employment change in London ? The next two sections develop this theme, moving from general to specific considerations, in outlining the aspect of planning control of relevance to this thesis - the use of development control powers to protect manufacturing jobs.

3.3 Urban planning and manufacturing industry : employment protection through land use intervention and the example of the B1 business use class and related permitted development.

Previous research shows that LPAs throughout the country are concerned about industrial decline. The results of a national survey of planning authorities quoted in Oatley (1991) found that 99% of LPAs regarded a shortage of industrial land and

premises as being of the highest importance. In the circumstances of industrial employment decline which characterise Britain's cities, LPAs may use development control powers to assist in the provision of manufacturing jobs. In this thesis concern is with the loss of manufacturing jobs, and with how land use planning powers have been used to respond to this loss.

Little research exists concerning the use of planning policies to respond to employment decline. However, following the modifications to the Use Classes Order (UCO) and the General Development Order (GDO) which are described below, some mention has been made in the literature of planning policies which sought to protect manufacturing jobs. Referred to as 'employment protection policies', they represent a direct planning response to the labour market consequences of structural economic change. These measures are implemented through the development control system in land use allocations and floorspace controls, where a restrictive approach is adopted towards changes of use in the hope of encouraging some types of economic activity at the expense of others. In many cases such policies have attempted to ensure a sufficient supply of land for industry by resisting pressures for the development of office space. It is these policies which the thesis seeks to examine for reasons explained in section 3.5 below. This section draws on existing literature to illustrate the use and potential importance of these policies, citing cases relevant to the London area.

Two points about employment protection policies, which are relevant to the discussion of the previous section, should be made at the outset. First, in terms of the rationale for planning intervention these policies could be classified under redistribution. This is because the intention is to modify the outcome of market forces such that the resulting distribution of resource will provide more comprehensive employment opportunities, and thus distribute jobs to sections of the population who may be under-provided in a free market situation. Second, in using development control in this way planning authorities are effectively depressing the development value of manufacturing land by enforcing only existing use rights. In other words, the threshold of the development value may be considerably lower than it would otherwise have been. This should have the intended effect of retaining land in manufacturing use by preventing the realisation of the rational development value of sites.

Examples of the practice of employment protection policies have been provided by LPAC (1990). LPAC undertook a study of the supply of industrial land and building in London. Three case study boroughs were examined, the London boroughs of Islington, Hillingdon and Kingston. LPAC found that although there were differences in areas of detail between the local policies operated by each borough "there is a common theme which runs through all of them, namely the presumption that to a greater or lesser extent industry and offices compete for the same land and buildings, and that the tendency will be for offices to outbid industry. It is also generally contended that industrial activity is either a better source of local employment than offices or at least that a fair balance has to be struck between the two in order to maintain a broad employment base. Thus, each borough's policies seek to protect industry either in specified locations, or generally, or even both, whilst channeling office development to a more limited range of locations and or circumstances" (LPAC, 1990, 12).

Daniels and Bobe (1990) found that the decline of manufacturing employment in London over the last 30 years, and the spatial expansion of office based activities was considered problematic by many boroughs. They showed that boroughs on the periphery of the City of London had pursued policies which to some extent were aimed at the retention of manufacturing industry. Home (1989) provides another example of employment protection policies in the case of the City of Westminster which has consistently tried to protect industrial floorspace within the borough. The Westminster district plan of 1978 stated that industrial activities which have important linkages with central London activities, particularly in the Central Activities Zone, should be maintained. The rationale for this policy was that , "the greater proportion of this floorspace was occupied by firms that had been long established in the area, such as clothing, fur and leather, and paper, printing and publishing. Many of these industries need a central location in order to maintain the linkages with their markets and perform the services required, but this central location also makes them vulnerable to pressure from other more financially profitable uses. The City council feels that the loss of these supporting activities may threaten the vitality of other important central London activities" (City of Westminster, 1978, 109). The reasoned justification for the policy recognised that internal changes in the operation of the firm which resulted in relocation

or closure could not be effectively influenced by policy, however, external pressures which could affect established linkages, often arose from competition for space from alternative land uses, and the policy was designed to minimise these pressures.

LPAs may therefore have been using development control powers to protect existing manufacturing land in the hope of retaining a range of local manufacturing employment opportunities. The rationale for this intervention could be thought of as an attempt to address the inequitable distribution of resources which may result in the absence of intervention. While the development of industrial land for offices uses may not be an inherently 'inefficient' market outcome, it may reduce job opportunities for certain members of the community particularly in employment terms. By retaining land in manufacturing use and by resisting change to other uses, the development potential of the land remains at the value of manufacturing and so higher value uses, which may consume the land in a free market will not be permitted. There may therefore be reason to assume that the pursuit of such policies will have implications for rates of manufacturing employment decline, because authorities which have explicitly attempted to protect manufacturing land may have experienced less job loss than would otherwise have been the case.

Concern for the role of planning policy in the protection of manufacturing jobs has arisen following changes made to the UCO and GDO in the 1980s. It is useful to introduce this example here, as it was drawn upon in the LPA survey presented in chapter five for reasons that will be discussed later. By way of illustration, it is enough here to provide a brief summary of the changes made to these orders. Appendix three provides a more detailed account of the origins of the UCO and GDO, of their legislative roles, and of the specific changes made to them in the 1980s.

Prior to the late 1980s planning permission was required for any change of use between the classes of light industry, general industry, and office use, defined under the 1972 UCO. In 1987, the UCO was modified to create a single 'business use' class, entitled B1, which allowed the consent free interchange of light industrial use, research and

development use, and certain kinds of office uses.[1] Modifications to the GDO in 1988 provided a further deregulation measure, allowing general industrial land to change any use within the B1 class. Effectively, the revisions placed the control over these changes of use outside the normal scope of LPA development control. As regards manufacturing use, LPAs can no longer control a change of use from general to light manufacturing use, or more importantly, from general or light manufacturing use to B1 office or research and development uses. In this respect, the changes provide an example of the potential importance of land use regulation for manufacturing use change because their introduction allows for some differences to be determined between the 'policy on' environment, when these changes were subject to LPA approval, and the 'policy off' environment, when they were not.

Perhaps the most widely discussed implication of the recent changes has been the reduction in the ability of local planning authorities to influence the location and structure of economic activity in their areas (Home, 1989; LPAC, 1990, Daniels, Bobe, 1991, Wootton Jeffreys, 1991). Commenting on the proposals for the B1 class, the RTPI (1986) argued that the creation of a business class might frustrate the effects of LPA policies which had been aimed at restricting some types of economic activity in their areas at the expense of others. In fact even Central Government recognised that this would be the case. The PAG report (PAG, 1985) specifically rejected employment protection policies arguing that they were unimaginative and desperate, and that "local authorities should not be concerned with fine judgments within the uses of the business class since the market should be allowed to determine its own solutions" (PAG, 1985, 23). Indeed PAG felt that the effects of these policies were important enough to specifically mention that one beneficial consequence of the introduction of the business class would be to frustrate LPA attempts at pursuing these objectives.

All three examples of employment protection policy research outlined above found that the removal of planning control under the UCO and GDO changes had adversely

[1] Specifically, these were intended to be office uses other than those within class A2 (financial and professional offices) and which did not provide a direct service to visiting members of the public. Grant (1989) points that while uses B1 (b) (research and development) and B1 (c) (light industrial), are defined rather flexibly, use B1(a) is much more specific. However, Grant also argues that the dividing line will be extremely difficult to draw since it will depend, for legal purposes, upon the tenuous criterion of the extent to which services are, or have been, provided to visiting members of the public.

effected the performance of these policies. For example, the LPAC (1990) study of industrial land in London concluded that with the exception of Kingston, the employment protection policies of the boroughs had been made impossible to enforce since the revisions to the orders were made (LPAC, 1990). Likewise, Daniels and Bobe (1990) found that in London the changes had " removed a great deal of planning control from the boroughs. Planners are finding it nearly impossible to prevent the incursion of B1 developments into residential areas or onto sites previously earmarked for light industrial use. While the B1 category does contain light industrial uses, applications within this class are almost exclusively for office use" (Daniels, Bobe, 1990, 19).

The effects of the changes can also be detected in the workings of the land market. This is because the displacement of industrial and light industrial uses may be encouraged by the rental and land value increases consequent upon the changes. Land previously held in general industrial use has since the use order changes, been granted planning permission to change to B1. Given that B1 includes office uses which command considerably higher rentals than industrial uses, an incentive exists to convert general industrial space to B1, or light industrial space to office use, to realise higher rates of return (Home, 1989; LPAC, 1990; Oatley, 1991). In placing changes of use outwith planning control the price of industrial land has been increased by raising its development value and thus allowing possibilities for higher rentals.

The effect of changes in land values was specifically mentioned by the Government in relation to the business use class. The PAG report argued that the amalgamation of classes into the business class, "could lead to a rise in certain light industrial rents in a manner which might affect the prospects or even viability of certain firms, especially certain small workshop businesses which occupy studio and other properties particularly suitable for office use. Our impression is that this effect would be transitional, and would not in any case be so substantial as to detract from the manifest advantages of deregulation in the nature we propose" (PAG, 1985, 40).

In fact, the tailoring firms of Savile Row in the London borough of Westminster managed to force an adjournment debate in the House of Commons prior to the

introduction of the 1987 UCO on the grounds of land value effects (Home, 1989). The M.P. for Westminster (North) put forward the argument that if increase in rental values were to cause the displacement of the tailoring firms from Westminster there would be a detrimental effect on the commercial activity of the area because they formed a central component of the economic network of Westminster, and as such, were interlinked with retail functions, art galleries and professional and commercial services, and consumed by people in an interrelated way. The government replied that rental values were not a planning concern and the tailors failed to achieve any modifications to the business class.

Oatley (1991) argues that LPAs are experiencing difficulties in maintaining an adequate supply of sites and premises for new industrial activity and that the appearance of B1 has contributed to this problem. Furthermore, "institutions and developers that already owned buildings in industrial land and property benefited from an increase in land and property values" (Oatley, 1991, 22). Both Oatley and LPAC (1990) have found evidence of pressure to convert general and light industrial accommodation to office space. In fact, the government themselves have published research results which have shown important land value implications arising from the introduction of the B1 class and related permitted development. The DoE commissioned Wootton Jeffreys Planning Consultants (1991) to examine the impacts of the UCO and GDO changes. The consultants conducted surveys of LPAs, and the users and developers of property in 6 case study areas, including the West End and City Fringe areas of London. The report stated that following revisions to the orders "every site with a light or general industrial use or allocation is potentially an office location. The choice between uses is no longer something that planning can seek to determine, but is entirely a market decision, to be made on the usual criteria of location and demand. With the return from office space significantly greater than other types of business space, then if the location is right, it will be office space that is built" (Wootton Jeffreys, 1991, 21). Their survey research showed that industrial land values and rents had been raised as a result of the changes, even on sites where industrial space would be more appropriate to market conditions. They also found evidence to suggest that the introduction of the new orders had provided an incentive to land use change from industrial use and had

adversely affected the ability of LPAs to influence employment opportunities in their areas.

This brief discussion of the impacts of the changes to the UCO and GDO has shown that there are reasons to believe that LPAs have sought to protect manufacturing jobs and that land use planning regulation may have an important role to play in influencing economic change. By deregulating the changes of use outlined above, LPAs are restricted in the extent to which they pursue economic objectives through development control, for example, in relation to employment. Furthermore, by restructuring the land and property development market incentives may be provided to investors and landowners to convert existing industrial land and premises to B1 to realise higher rentals from other uses, notably office use. In other incidences, rental increases consequent upon the revisions made to the orders may cause the displacement of manufacturing activity by office use as rental increase render sites too expensive for industrial manufacturing, and thus, the process of sequential occupation is initiated through the outbidding of space from competing uses. The blighting of industrial sites may be another land use implication of the changes as developers discourage industrial uses on their sites and premises in the hope of attracting higher value B1 uses.

3.4 The substantive and theoretical relevance of employment protection policies.

This section highlights the substantive and theoretical relevance of employment protection policies with respect to London's industrial change and to contemporary theories of urban manufacturing change. It shows that important research questions about manufacturing employment decline in the capital arise from a consideration of the effects of land use planning controls.

The substantive contribution offered through the examination of employment protection policies is apparent from the discussion in section 3.3 above, however, it is worth clarifying some issues here. The basic reason for assuming that land use planning may have an influence on the composition and location of intra-urban economic activity, and by extension the diversity of employment opportunities, is straightforward. One of the basic resources required for any economic activity to function is land, and as outlined

above, the development and use of land is regulated by the town and country planning system. In certain situations, LPAs may wish to manipulate land use controls to achieve desired outcomes in relation to the economic base of their areas. The discussion in the previous section has shown that LPAs may have attempted influenced the course of employment change and it is this issue which the thesis seeks to explore.

Chapter one discussed the deindustrialisation of London, reviewing previous literature which has emphasised the scale and diversity of manufacturing employment decline in London. The use of employment protection in London over the 1980s offers a means of understanding the extent to which planning intervention can impinge upon employment change. As mentioned previously, these policies have been designed by LPAs as a direct reaction to the labour market consequences of structural economic change. In this respect, they are directly relevant to the London case where deindustrialisation has radically altered the demand for labour in the London economy.

Some research questions may be developed through a focus on the planning response to deindustrialisation. First, is to what extent have employment protection policies been practiced throughout the Greater London area? Second, have these policies been able to influence the extent of manufacturing employment decline, and if so, can boroughs be differentiated in terms of manufacturing job loss by the degree to which policies were developed and implemented to protect manufacturing employment? Third, and equally important, have LPAs been successful in achieving employment protection objectives, and if not, why not?

Thus, the substantive relevance of these policies arises primarily from the desire to explore how important land use planning regulation may be for manufacturing employment change, however, it is also hoped that the understanding of London's industrial change may be advanced through an exploration of why employment protection policies are successful or not. This leads on to the relevance of the research in relation to the theoretical perspectives of urban manufacturing change outlined in chapter two. The theories reviewed drew upon a wide variety of factors in attempts to explain urban manufacturing change, most of which are not relevant to the issue of land

use planning regulation. However, two of the theoretical perspectives provide important contexts within which the emphasis on employment protection policies may be justified.

First, is the space constraint thesis which was described under the structural explanations in chapter two and is associated with the work of Fothergill and Gudgin. This thesis supposes that against a backdrop of falling employment densities induced by increased use of capital, urban and rural areas have differed in rates manufacturing employment change due to the opportunities allowed for the expansion and growth of industrial activity. Cities, it is argued, often do not have adequate levels of space required for new manufacturing firms or for the expansion of other firms, and these space constraints in cities have been instrumental in creating the urban rural manufacturing contrast. This thesis is clearly directly relevant to the planning case. If LPAs in London have been pursuing employment protection policies which have protected sites earmarked for manufacturing industry, then the space constraints on industrial expansion or location may not be as stringent as Fothergill and Gudgin have imagined. In other words, if Fothergill and Gudgin's theory is accurate then planning could conceivably intervene to influence the manufacturing decline of cities by simply regulating the amount of space available for manufacturing industry.

The second, and perhaps most relevant, theoretical perspective is that of the global city interpretation of manufacturing change. Here it was argued that the decline of manufacturing and the growth of service sectors functions, and particularly those related to London's role as a 'global city', are inextricably linked. This is because the growth of service industries has resulted in competition for resources with manufacturing industry at the urban level, and Sassen believes that manufacturing has been 'crowded out' because it cannot compete effectively for investment and space. Land use planning regulations of the type to be examined in this thesis are directly relevant in relation to intra-urban competition for space. LPAs have the option of attempting to intervene in the type of competition arising from structural economic change which Sassen outlines to achieved desired labour market objectives. Furthermore, it has been argued earlier that one of the main effects of land use planning controls is that a refusal of permission will tend to dampen the development value of land, and if this is the case, then the argument that structural economic change 'revalues' space in the city becomes more

complex. Essentially, the 'crowding out' effect is in many respects a pre-requisite in the rationale for the use of employment protection policies, and if these policies have been successful, then it may add another dimension to the ways in which we understand the crowding out process.

In sum, some additional research questions may be developed through consideration of these two perspectives. Space constraint thesis cites the lack of available space for industrial expansion in urban areas as an important explanatory variable in the much higher rates of manufacturing employment decline in cities. However, if LPAs are specifically allocating land for manufacturing use and existing change to any other uses, has this not lessened the effects of space constraint ? Likewise, the 'global city' explanation for manufacturing decline is that much industrial activity was 'crowded out' of London by the growth of service sector functions. If London LPAs have pursued employment protection policies which restrict changes of use from industrial land, then has this policy stance inhibited the extent of crowding out ? More fundamentally, the examination of employment protection policies may shed some light on the extent to which the two perspectives are actually happening in London, if at all.

The other theoretical perspectives which broadly emphasised such factors the importance of industrial costs, changes in the nature of external economies, and changes in the nature of production itself, would be less easily influenced by employment protection policies. If these types of processes have been more important in determining the outcome of manufacturing change in London then the research may discover that these provide explanations for the lack of success of employment protection policies. Alternatively, the investigations to be conducted may generate new theories of the dominant processes at work in London's manufacturing change.

This section has demonstrated the substantive and theoretical contributions that may arise through the study of London's industrial change with respect to the pursuit of employment protection policies. Clearly, there are other policy options available to London local authorities if they wish to influence manufacturing employment loss, particularly in terms of promotional activities. However, emphasis in the thesis is on employment protection policies as advanced through the development control system,

because they offer a useful perspective through which one can explore and challenge the empirical and theoretical understanding of London's industrial change.

3.5 Conclusions.

This chapter has argued that planning controls can be used to protect manufacturing jobs, offering a means by which LPAs can 'respond' or 'react' to structural economic change, and that in many cases these responses may have been important particularly in London. Chapter five presents the results of a survey of London LPAs which explores the use of employment protection polices over the 1980s, outlining the ways in which authorities have reacted to manufacturing employment decline, what policies they have pursued, and how successful the authorities perceive these policies to have been. Before doing so however, it is important to quantify the scale and extent of industrial employment change in London over the 1980s, providing an empirical context for the examination of employment protection policies.

Chapter 4 : Employment change in London's manufacturing, 1981 to 1991.

4.0 Introduction.

Chapter four presents an analysis of employment change in the London manufacturing sector over the 1981 to 1991 period, using workplace-based employment data from the censuses of employment (CoE). A full description of this data source, and of the SIC under which it is classified, can be found in appendix one[A]. This chapter has three main sections. The first compares and contrasts the employment fortunes of manufacturing with other sectors of the London economy outlining broad changes in the labour demanded across all industries defined at the division level of the SIC. Section two focuses on sectoral aspects of manufacturing in London showing which sectors have been the most important employers in London, and how change over the decade has affected different industries. Spatial aspects of manufacturing employment change are considered at the borough level in section three. This chapter shows that there has been a dramatic decline in the demand for manufacturing employment in the London economy over the 1981 to 1991 period, a much more severe decline than experienced in the nation as a whole. Furthermore, it is shown that manufacturing employment loss has, with minor exceptions, affected all industrial sectors in the capital and all the London boroughs. In this respect, the analysis sheds some initial doubt on the success or influence of LPA employment protection policies.

4.1 Change in the labour demanded by the London economy, 1981-1991.

The London conurbation is the largest single concentration of jobs in Great Britain. The latest census of employment shows that in 1991, London contained over 15% of Britain's total employment of 21,570,000 jobs. Important structural shifts in the labour demanded by the London economy have occurred over the 1980s characterised in broad terms by an enormous decline in the demand for manufacturing employment, and a rapid increase in jobs associated with activities within the banking, finance, insurance and business services division. The purpose of this section is to review these broad shifts in the structure of London's employment.

[A] The Census of Population also contains employment data. The CoE is the preferred source used here for two main reasons. First, the CoE data is entirely workplace based and thus relates to jobs provided by industries within the Capital rather than to the employment of residents. The Census of Population on the other hand is a resident based census, and while it does present employment data which has been geographically referenced by the workplace of employees, the industrial disaggregation is inferior to that provided under the CoE. Second, is that the CoE has been undertaken at regular intervals over the 1980s allowing for detailed analyses of changes over time while the Census of Population is produced only every ten years.

Table 4.1 shows change in the structural composition of London jobs over the 1981 to 1991 period. At the beginning of the decade London's employment structure was dominated by service industries. Over 3,560,000 people were employed in London in 1981 and approximately three quarters of this employment was in services. However, the importance of manufacturing employment at this time should not be understated. Manufacturing industries accounted for 19% of total employment, providing more jobs than either the banking, finance, insurance, and business services sector, or transport and communications; and almost exactly the same number as in the distribution, hotels, and catering sector. In fact, London contributed over 11% of Britain's total manufacturing employment in 1981. So while employment was clearly service sector orientated, manufacturing still formed an important component of the capital's aggregate labour demand.

This initial employment structure changed radically over the decade. Just under 9% of London's total jobs were shed over this ten year period, however, most striking is the severe absolute loss of manufacturing employment. Over 300,000 jobs were shed in London's manufacturing industries, reducing these jobs in the capital by almost half, from approximately 684,000 to 359,000. In fact, manufacturing employment decline accounted for 67% of the gross job loss in London over the eighties. Severe employment decline was apparent in all three sectors of manufacturing defined at the division level of the SIC, and was a consistent feature of change in all four census periods between 1981 and 1991.

In total, service sector employment expanded. However, the growth rate was modest, only 3%, or an increase of 81,000 jobs, and was equivalent to only approximately one quarter of the total job loss in the manufacturing sector alone. As Table 4.1 shows, two of the four service industries actually shed employment over the 1980s - distribution, hotels, and catering; and transport and communications; which together saw the loss of some 110,000 jobs. In fact substantial absolute employment growth was narrowly concentrated in the banking, finance, insurance and business services division. In this sector of the economy the number of jobs increased by almost 30%, from 566,000 jobs in 1981 to 733,500 by 1991. Further analysis of the employment data at finer level of disaggregation shows that the main contributors within this sector were in business

Table 4.1 : Change in the employment structure of Greater London, 1981 to 1991.

	Employment by Industrial Sector				Change in Employment by Industrial Sector	
	1981		1991		1981- 1991	
	No. of Jobs	% of Total	No. of Jobs	% of Total	No. Of Jobs	% Change
0 Agriculture, Forestry and fishing	1771	0.0	1192	0.0	-579	-32.7
1 Energy and Water Supply Industries	55504	1.6	40172	1.2	-15332	-27.6
Total Primary	57275	1.6	41364	1.3	-15911	-27.8
2 Extraction of Minerals other than Fuels; Manufacture of Metals, Mineral products and chemicals	72838	2.0	35439	1.1	-37399	-51.3
3 Metal goods, Engineering and Vehicle Industries.	301143	8.5	132954	4.1	-168189	-55.9
4 Other Manufacturing Industries	309970	8.7	190455	5.9	-119515	-38.6
Total Manufacturing	683951	19.2	358848	11.0	-325103	-47.5
5 Construction	161407	4.5	118367	3.6	-43040	-26.7
6 Distribution, Hotels and Catering; Repairs	686598	19.3	645955	19.8	-40643	-5.9
7 Transport and Communications	368288	10.3	307682	9.5	-60606	-16.5
8 Banking, Finance, Insurance, Business services and leasing	565876	15.9	733513	22.5	167637	29.6
9 Other services	1034526	29.1	1049015	32.2	14489	1.4
Total Services	2655288	74.6	2736165	84.1	80877	3.0
Total Employment	3560688		3254744		-305944	-8.6

Source : Census of Employment (NOMIS)

services, such as legal services, accountancy, professional and technical services; and to a lesser, though still important extent, in banking and finance. The only other service sector defined at division level which experienced employment growth over the period was 'other services', experiencing a marginal expansion of only 1.4% or 14,500 jobs. Thus, significant job gains over the eighties in London's service industries were narrowly sectorally based, being focused principally within the types of producer services as described in previous chapters.

The two remaining broad sectors of the London economy, the primary and construction industries, together provided only 6% of London's total employment in 1981. Both sectors shed approximately 27% of employment over the decade, amounting to 16,000 primary, and 43,000 construction jobs.

Table 4.1 also compares London's employment structure in 1981 with that of 1991, to demonstrate how these absolute employment changes have affected the internal sectoral composition of employment. Major shifts are apparent in the relative importance of the manufacturing and service sectors. The share of London employment in manufacturing decreased from 19.2% to 11% between 1981 and 1991, while the relative importance of employment in the service sectors increased dramatically, from 74.1% of total employment to 84.1%. The demand for labour in the London economy has become much more orientated towards service industries, and particularly towards employment in the banking, finance, insurance and business services sectors, and at the same time has moved away from manufacturing industries. However, given that growth in total service employment was only 3% in absolute terms, it would seem that manufacturing decline has been the dominant factor in creating the relative sectoral shifts. The result is that London's employment structure in 1991 was very different to that of 1981. Then, the importance of manufacturing was roughly equivalent of that of hotels, distribution and catering, and actually greater than that of banking, finance, insurance and business services. This is certainly not now the case. Manufacturing employment in London has declined severely in absolute terms, but also relative to other sectors of the economy.

A comparison of London's employment structure and performance with that of Great Britain is shown in table 4.2. The table expresses employment in London as a location

Table 4.2 : A comparison of employment change in Greater London and Great Britain, 1981 -1991

		London employment location quotients		Employment change by sector 1981 -1991		London employment as % of British employment	
		1981	1991	London	Britain	1981	1991
0	Agriculture, Forestry and fishing	0.03	0.03	-32.7	-21.8	0.5	0.4
1	Energy and Water Supply Industries	0.48	0.63	-27.6	-38.8	8.0	9.5
	Total Primary	0.32	0.38	-27.8	-32.9	5.4	5.8
2	Extraction of Minerals other than Fuels; Manufacture of Metals, Mineral products and chemicals	0.48	0.36	-51.3	-29.2	8.0	5.5
3	Metal goods, Engineering and Vehicle Industries.	0.63	0.43	-55.9	-28.2	10.5	6.5
4	Other Manufacturing Industries	0.81	0.67	-38.6	-17.9	13.6	10.1
	Total Manufacturing	0.68	0.52	-47.5	-24.5	11.3	7.8
5	Construction	0.89	0.81	-26.7	-10.9	14.8	12.2
6	Distribution, Hotels and Catering; Repairs	1.00	0.92	-5.9	13.0	16.8	14.0
7	Transport and Communications	1.57	1.54	-16.5	-5.4	26.3	23.2
8	Banking, Finance, Insurance, Business services and leasing	1.96	1.86	29.6	51.0	32.7	28.1
9	Other services	1.06	1.03	1.4	14.8	17.6	15.6
	Total Services	1.21	1.18	3.0	16.9	20.3	17.9
	Total Employment			-8.6	1.2	16.7	15.1

Source : Census of Employment (NOMIS)

quotient for each industrial division relative to Great Britain as a whole, compares rates of change in employment by sector, and shows London's employment in each sector as a percentage of the total British employment in that sector.[1]

The 1981 location quotients for London indicate a highly specialised structure of employment relative to the nation. At this time, only the service sectors were over-represented in London and two sectors in particular stand out. First, is financial and business services, which accounted for 32.7% of total British employment in these industries. London specialised in this sector more than any other as is indicated by the location quotient value of 1.96, reflecting the concentration of financial and business services associated with the 'City' and the presence of much headquarters business activity. Second, is transport and communications, with London industry providing 26.3% of total British employment in this sector. The high location quotient of 1.57 reflects the key position that London holds in the national transport network, but also its own vast internal transportation system. The remaining service sectors were approximately as important in the London economy as they were nationally. Employment in manufacturing, construction and the primary industries was, to various degrees, under-represented in the capital relative to Britain. Thus, London's employment structure has been distinctive relative to the nation for some years, appearing skewed towards services, with manufacturing being considerably less important than it is nationally.

Comparing employment change over the 1981 to 1991 period, table 4.2 shows important differences between the performances of London and Britain. While total British employment grew by just over 1%, the number of jobs in London declined by just under 9%, and in fact, with the exception of the energy and water supply industries, London's employment performance has been unfavourable relative to the nation in all sectors of industry defined in the table. London's rate of employment loss in manufacturing was almost double that of the nation as a whole, and more than double in

[1] The location quotient is an index of the relative concentration of an industry in an area and is calculated as follows :

$$LQ = \frac{\text{London's employment in industry X / total London employment}}{\text{Britain's employment in industry X / total British employment}}$$

a location quotient of less than 1.0 indicates under-representation of industry X in London relative to the nation, of greater than 1.0 relative over-representation, and of 1.0 an identical share.

the construction industries. Even in the banking, finance, insurance and business service sector where London experienced a strong employment growth of 29.6%, the growth performance was still poor relative to the nation where jobs grew by 51%.

However, in splitting the decade into two periods, 1981 to 1987 and 1987 to 1991, it seems that London's employment growth in banking, finance, insurance and business service employment was roughly equivalent to that of the nation in the former period, just over 33%. While employment in this sectors continued to grow in the nation as a whole by 13% in the latter period, the impacts of recession are apparent in London, where employment fell by just under 3%. Interestingly, this difference between London and the nation is not evident in other sectors, and particularly not in manufacturing, where London continually shed more jobs than the nation throughout the decade.

The outcome of these differentials in the employment performance of the capital and the nation over the eighties is that with the exception of the energy and water supply industries, London's share of national employment has fallen in all sectors of industry defined at this level of disaggregation. In total services, London share of British employment fell from 20.3% to 17.9%, in manufacturing from 11.3% to 7.8%, and in construction from 11.3% to 7.8%. A further interesting component of London's employment change is that London actually became less specialised in service employment. Comparing the 1981 and 1991 location quotients reveals that London is now less specialised in all four service industries relative to the nation than it was in 1981. In other words, national employment change has actually been even more narrowly focused than London's experience.

This section has provided a brief account of employment change in different sectors of the London economy over the 1981 to 1991 period. Some interesting aspects of change have been identified, most of which, particularly in relation to services, are outwith the scope of this thesis (see Graham, Spence, 1995 for a discussion of broad trends). However, hopefully what this section has demonstrated is that manufacturing employment in London has declined both in its relative importance to total London employment, and in absolute terms. More importantly, the decline of manufacturing employment in London has been the instrumental factor in bringing about the broad

shifts in the structure of employment over the 1980s that were shown above. In addition, London's manufacturing employment loss has been much greater over this period than that experienced by the nation as a whole. While London's employment either grew more slowly, or declined faster than the nation in almost all industrial divisions, the extreme nature of job loss in the manufacturing sector has meant that regardless of the poor relative performance of other sectors, London now specialises in manufacturing considerably less than it did at the beginning of the decade. In employment terms, London has relatively and absolutely deindustrialised over the 1980s.

4.2 A sectoral analysis of London manufacturing, 1981-1991.

The following section provides a detailed sectoral analysis of manufacturing employment change in London over the 1981 to 1991 period. The objectives are to show which sectors of London manufacturing are important in the capital and to examine any variations in rates of employment change between the different industries.

Before going on to look in detail at London's manufacturing sectors, it is worth briefly outlining some general characteristics of the composition of London's manufacturing employment. Throughout the 1980s, approximately 90% of London's manufacturing jobs have been in full-time employment. Of these, just over 75% have been male and just under 25% female. Of the 10% of total manufacturing jobs in part-time employment, approximately 75% have been female and the remaining 25% male. In comparison to the nation, the London figures are similar in the part-time and full-time split of employment, and in the gender division of full-time jobs. London differs from the nation in the gender division of part-time jobs, where the proportion of females in Great Britain is slightly higher than in London. However, generally the composition of manufacturing jobs in the capital does not differ greatly from the nation. In this chapter, the focus is on detailed sectoral and spatial aspects of manufacturing employment change. The data suggest that only minor changes have occurred in the four way composition of employment over the decade, and since use of this breakdown would add an unnecessary degree of complexity to this detailed analysis, it has not been attempted here.

Great differences are apparent in the relative internal importance of different manufacturing sectors in London. The percentage share figures in table 4.3 show that for both 1981 and 1991, the majority of London's manufacturing jobs have been within just a few of the 21 sectors. If employment were distributed evenly each industry defined at the class level of the SIC would comprise approximately 4.8% of total manufacturing employment. In both 1981 and 1991, six sectors consistently held employment shares above this hypothetical average. These were the manufacture of paper and paper products, printing and publishing; electrical and electronic engineering; food drink and tobacco industries; mechanical engineering; chemical industries; and footwear and clothing industries. In 1981, employment in these six sectors alone accounted for 68.4% of total manufacturing jobs in London, and by 1991 this figure had increased to 70.4%. The paper, printing and publishing industry is a particularly significant employer, providing over a quarter of all London's 1991 manufacturing employment. Industrial sectors which employ less people in London include : the extraction and preparation of metalliferous ore, the production of man made fibres, the extraction of minerals, the manufacture of leather goods, textiles manufacture, metallic and non metallic manufacturing, and the manufacture of transport equipment other than vehicles.

The location quotients, which indicate London's industrial specialisation relative to the nation, emphasise many of the industries which are internally important. For both 1981 and 1991, the paper, printing and publishing industry registers location quotients of over 2.0, indicating that it is over twice as important in London's manufacturing as it is in the nation as a whole. In addition, the chemical industries, electrical and electronic engineering, and the footwear and clothing industries all have location quotients greater than 1.0 for both years. However, London also has high location quotients in a number of industries which were not found to be internally important. The other manufacturing industries, which includes jewellery and coins, musical instruments, photographic and cinematographic equipment, toys and games and stationers goods, the manufacture of office machinery and data processing equipment, and instrument engineering, were all over-represented in London in both 1981 and 1991. However, the industries which were found to have held extremely low share of London's total manufacturing employment

Table 4.3 : Sectoral composition and specialisation of manufacturing employment in London 1981 and 1991, (Class Level 1980 SIC).

	absolute numbers of jobs		% of total manufacturing employment		location quotients relative to Great Britain	
	1981	1991	1981	1991	1981	1991
21 Extraction/preparation:metalliferous ore	14	2	0.00	0.00	0.06	0.03
22 Metal manufacturing	11497	3895	1.68	1.09	0.38	0.36
23 Extraction of minerals (Other)	528	355	0.08	0.10	0.12	0.17
24 Manufacture:non-metallic products	12937	5262	1.89	1.47	0.51	0.39
25 Chemical industry	47487	25915	6.94	7.22	1.17	1.08
26 Production of man-made fibres	375	10	0.05	0.00	0.19	0.02
31 Manufacture of metal goods (Other)	36905	16270	5.40	4.53	0.79	0.74
32 Mechanical engineering	77200	33861	11.29	9.44	0.77	0.64
33 Manufacture:office machinery/D.P. equip.	16239	7781	2.37	2.17	1.90	1.37
34 Electrical/electronic engineering	108456	44200	15.86	12.32	1.45	1.13
35 Manufacture:motor vehicles/parts thereof	33374	17284	4.88	4.82	0.86	0.98
36 Manufacture of other transport equipment	12353	6443	1.81	1.80	0.30	0.38
37 Instrument engineering	16616	7115	2.43	1.98	1.31	1.03
41 Food,drink/tobacco manufacturing	77151	38751	11.28	10.80	1.02	0.94
43 Textile industry	6407	4258	0.94	1.19	0.21	0.32
44 Manufacture of leather/leather goods	3615	1592	0.53	0.44	1.15	1.27
45 Footwear/clothing industries	39785	18554	5.82	5.17	1.14	1.05
46 Timber/wooden furniture industries	28078	14181	4.11	3.95	1.16	0.87
47 Manufacture of paper/paper products; etc	117408	91424	17.17	25.48	2.04	2.54
48 Processing of rubber/plastics	16916	10940	2.47	3.05	0.76	0.69
49 Other manufacturing industries	20610	10755	3.01	3.00	2.08	1.95
	683951	358848				

Source : Census of Employment (NOMIS)

are, with the exception of leather goods, also those which are markedly under-represented in London relative to the nation.

London therefore, appears to have important industrial specialisations within manufacturing, and while the SIC does not indicate the precise nature of activities being undertaken, with recourse to the brief history of London's industrial development included in the introduction to this thesis, two broad types of manufacturing which had a strong presence in London may still be identified. First, are the traditional craft industries identified by Hall (1962; 1964), which may include printing and publishing; footwear and clothing industries; the furniture industry; and the jewellers, stationers and musical manufactures found within the other manufacturing industries class. Second, there are the industries more generally associated with factory production including electrical and electronic engineering; the manufacture of office machinery and data processing equipment; the chemical industries; food, drink and tobacco manufacture; vehicle and vehicle part manufacture; mechanical engineering; and instrument engineering.

As was shown above, manufacturing employment in London declined by just under 50% between 1981 and 1991. One characteristic of this decline is that it has been consistent across almost all industrial sectors. Of the 210 manufacturing activities defined at the most detailed level of the SIC employment in London expanded in only 18. Furthermore, altogether employment growth in these 18 activities created only 9,770 jobs, while gross employment decline in the remaining 192 sectors was of the order of 334,900 jobs. Interestingly, over half the employment growth that did occur was within just two activities, the printing and publishing of books, and the printing and publishing of periodicals. However, the general indication from the detailed employment data is that with the exception of these two sectors, and ignoring sporadic small employment changes, decline has been a feature of employment change for all industries in London. This sectoral consistency does not in itself make London's manufacturing performance unique. For Great Britain as a whole, only 39 of the 210 activity headings experienced employment growth over the 1981 to 1991 period. What is perhaps most remarkable about the London experience is that in 175 of the 210 sectors the capital's share of total British employment declined.

The activity heading level of the SIC provides a very high degree of industrial detail. However, for the efficient presentation of data the use of 210 sectors is impractical, and as such results at the class level of the SIC are presented here. Table 4.4 shows absolute job loss and rates of employment change for each manufacturing class over the 1981 to 1991 period. Immediately it can be seen that employment decline has affected every manufacturing sector in London. Unsurprisingly, the industries with the most jobs in 1981 have generally shed the highest absolute numbers of jobs over the decade. These include electrical and electronic engineering; mechanical engineering; food, drink and tobacco industries; paper publishing and printing industries; the chemical industries; and the footwear and clothing sector. Approximately two thirds of London's total manufacturing job loss was shed from these six sectors alone, some 214,800 jobs. Industries which provided few jobs in London in 1981 have generally shed less absolute numbers of jobs over the decade. For example the combined job loss in textiles, leather goods, man-made fibres, the extraction of minerals, and the extraction and preparation of metalliferous ore, accounted for only 1.4% of total London manufacturing job loss.

In terms of rates of change, there appears to be considerable variation between the sectors. The mean rate of employment loss for all sectors over the 1981 to 1991 period is 52.9%. Ten sectors have rates of loss above this average, and eleven below. The production of man made fibres, and the extraction and preparation of metalliferous ore, experienced particularly severe rates of job loss, with 97.3% and 85.7% of jobs respectively being shed over the decade. Of the industries which experienced above average rates of employment decline four accounted for particularly large shares of overall employment loss. These were : the electrical and electronic engineering industries, which lost 59.2% of employment, contributing 19.8% to total job loss; mechanical engineering which shed 56.1% of jobs, 13.3% of total job loss; and the manufacture of metal goods other than transport, and the footwear and clothing industries, which both lost over 53% of employment, and contributed over 6% each to total manufacturing employment decline. The remaining six industries with above average rates of employment decline accounted for 8.4% of total London manufacturing job loss.

Table 4.4 : Manufacturing employment change by sector, Greater London 1981 - 1991. (Class Level 1980 SIC)

	No. of Jobs	% Change
21 Extraction/preparation:metalliferous ore	-12	-85.7
22 Metal manufacturing	-7602	-66.1
23 Extraction of minerals (Other)	-173	-32.8
24 Manufacture:non-metallic products	-7675	-59.3
25 Chemical industry	-21572	-45.4
26 Production of man-made fibres	-365	-97.3
31 Manufacture of metal goods (Other)	-20635	-55.9
32 Mechanical engineering	-43339	-56.1
33 Manufacture:office machinery/D.P. equip.	-8458	-52.1
34 Electrical/electronic engineering	-64256	-59.2
35 Manufacture:motor vehicles/parts thereof	-16090	-48.2
36 Manufacture of other transport equipment	-5910	-47.8
37 Instrument engineering	-9501	-57.2
41 Food,drink/tobacco manufacturing	-38400	-49.8
43 Textile industry	-2149	-33.5
44 Manufacture of leather/leather goods	-2023	-56.0
45 Footwear/clothing industries	-21231	-53.4
46 Timber/wooden furniture industries	-13897	-49.5
47 Manufacture of paper/paper products; etc	-25984	-22.1
48 Processing of rubber/plastics	-5976	-35.3
49 Other manufacturing industries	-9855	-47.8
	-325103	-47.5

Source : Census of Employment (NOMIS)

Of the eleven sectors which experienced below average rates of decline, in only five was the difference in decline sufficient to actually increase their relative share of London's manufacturing employment over the decade. The paper, publishing and printing industry stands out in this respect. This sector experienced the lowest rate of employment decline over the period of 22.1%, well under half the mean rate, and as mentioned previously, two activities within this class did achieve employment growth in London over the decade. Due to the sheer size of this sector in 1981, this relatively lower rate of decline still contributed just under 8% of total job loss, however, by 1991 the share of total London employment in this sector had increased from 17.2% to 25.5%. The other four sectors that increased their shares of total employment over the decade are the chemicals industry, the processing of rubber and plastics, the textiles industry, and the extraction of minerals. In all four cases the actual increase in share was very small.

Comparing employment change across sectors is actually extremely difficult. For example, a decline in employment of 85.7% in the extraction and preparation of metalliferous ores led to an absolute loss of only 12 jobs, while a 22.1% decline in employment in publishing and printing industry involved the loss of almost 26,000 jobs. The problem in the interpretation of the figures arises from the fact that relative and absolute job loss are dependant to a large extent on the number of jobs that existed in the base year. In fact, correlating sectoral shares of jobs in 1981 with sectoral share of job loss between 1981 and 1991 produces a positive Pearsons correlation coefficient of 0.9. This indicates that job loss has been to a large extent proportionate to the number of jobs in each industry in the base year, and as such relatively evenly spread across the manufacturing sectors. This is consistent with the figures presented in table 4.3 which generally show only marginal changes in the relative positions of the manufacturing sectors over the decade. The exceptions which can be picked out in this respect are the paper printing and publishing industries, which performed well in relation to other manufacturing sectors, and electrical and electronic engineering, and mechanical engineering, which both shed employment severely in absolute and relative terms. Clearly, degrees of variation in change do exist between the different sectors, however, these should not be over-emphasised. The data presented in table 4.4 are consistent with

previous studies of London's manufacturing which have shows that all manufacturing sectors have contributed to London's decline

The use of data at the class level of the SIC is adequate for describing general sectoral trends in London manufacturing. However, an important issue that requires analysis at the most detailed level of the SIC relates to the employment performance of high-technology manufacturing. The distinction between low and high-technology manufacturing industries used here, is that proposed by Hall et al (1987) which comprises activities within the broader classes of chemical manufacture; the manufacture of office machinery and data processing equipment; electrical and electronic engineering; and the manufacture of other transport equipment. (see appendix one)

In 1981, high-technology industries accounted for over 13% of manufacturing jobs in the capital. By 1991 this figure had fallen to 10.5%. Table 4.5 shows that as a whole, high-technology industry experienced higher rates of employment loss over the 1981 to 1991 period than low-technology. It would appear that those industries which were the largest employers in 1981 have also suffered the most severe rates of decline. Thus activities 3443, 3453 and 3441 all suffered above average rates of decline, together accounting for the loss of some 34,454 jobs, or 63% of total high-technology job loss. Only three of the industries shown in table 4.5 have shed jobs at a slower rate than the average for all manufacturing industries, and six were substantially above it. Thus, unevenness in rates of decline is evident amongst the high-technology industries, and in contrast to low-technology manufacturing, this has radically altered the relative importance of each industry over the decade. The conclusion must be that the performance of the high-technology sectors is very much part of London's manufacturing employment decline.

Finally in this section, it is worth investigating how London's sectoral employment change compares to the national experience. To do this, standard shift-share methods are used to assess the degree to which the patterns of manufacturing employment change outlined above, have been influenced by either the structural composition of the London economy, or by some locational or competitive effects within London. The shift-share

Table 4.5 : Greater London high technology industry, 1981 - 1991, (activity heading level 1980 SIC).

	Employment				Employment Change	
	1981		1991		1981- 1991	
	No. of jobs	% total H-T	No. of jobs	% total H-T	(No. of Jobs)	(% change)
2570 Pharmaceutical products	12463	13.59	7338	19.50	-5125	-41.1
3302 Electronic data processing equipment	8833	9.63	6586	17.50	-2247	-25.4
3441 Telegraph/telephone apparatus/equipment	12065	13.16	1444	3.84	-10621	-88.0
3442 Electrical instruments/control systems	6659	7.26	2747	7.30	-3912	-58.7
3443 Radio/electronic capital goods	16932	18.46	6388	16.98	-10544	-62.3
3444 Components:electronic equipment	1672	1.82	642	1.71	-1030	-61.6
3453 Active components/sub-assemblies	16053	17.51	2764	7.35	-13289	-82.8
3454 Electronic consumer goods/etc (Other)	9337	10.18	4131	10.98	-5206	-55.8
3640 Aerospace manufacture/repairing	7688	8.38	5584	14.84	-2104	-27.4
Total High Tech	91702		37624		-54078	-59.0
Total Low Tech	592249		321224		-271025	-45.8

Source : Census of Employment (NOMIS)

technique compares the actual employment performance of a region, with what would have happened had the region changed at the same rate as some benchmark area, normally the country as a whole. Essentially the technique standardises and summarises data in order to arithmetically isolate the significance of the industrial structure of a region in its employment performance. It does this by identifying three components of actual employment change in a region. First, the regional share component, which is the amount by which total employment in a region would have changed had it changed at precisely the same rate as total employment in the wider benchmark area; second, the structural shift component which describes the change expected in a regions employment if each industry had grown at its own national rate, less the rate of growth for all industry nationally; and third, the differential shift component, which is a residual left over after the regional share and structural components have been subtracted from actual employment change.[2] The differential component has traditionally been explained in terms of the local competitive advantages of a region. Comprehensive accounts of the shift-share method can be found in Vickerman (1984), Armstrong and Taylor (1985), Fothergill and Gudgin (1979a), Ashby, (1968; 1970), Randall (1973) and Townroe (1969).

Reservations over the use of shift-share have been expressed, particularly in relation to its sensitivity to industrial disaggregation and its disregard for inter-industry linkages, but also

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[2] Using notation similar to Casler (1989), the shift-share identity (employment change = regional share + differential shift + structural shift) is expressed algebraically as :

$$X.^*_j = X^* + \sum_i \alpha_{ij} (X^*_{ij} - X^*_i) + \sum_i \alpha_{ij} (X^*_i - X^*).$$

Where X is employment, i denotes an industry, j a region, and * growth rates, while α_{ij} is the share of region j's total employment in industry i in the base year. It is worth stressing that structural effects are calculated with respect to the composition of employment in the base year. This means in effect that the shift-share is comparing actual employment change in London over the 1981 to 1991 period to what would have happened in London had employment in each industry changed at the same rate as in the nation as a whole given the *initial* structure of London industry. In other words the shift-share analysis conducted here does not take into account changes in London's industrial structure which may have taken place over the period being examined. This deficiency of the standard shift-share method has prompted criticism in the literature with some authors proposing that middle and end year values should be incorporated within the analysis (Stillwell, 1969; Ashby, 1968, Townsend, 1969). Here the purpose is simply to examine how the structure of London industry at the beginning of the 1980s might have influenced employment change given national sectoral job change. Clearly, London's industrial structure has altered over the 1980s as described above, and additional shift-share analyses could be conducted which consider the influence of structural effects at different points over the decade. However, given that the figures presented in table 4.3 suggest that only minor differences have occurred in shares of total manufacturing employment held by each sector over the 1981 to 1991 period, it is not anticipated that the choice of year used to measure structural effects should radically alter any conclusions reached about their influence.

because it is essentially a-theoretical and as such does not indicate what the proper interpretation of the differential component should be (Buck, 1970; Richardson, 1978b; Houston, 1967; Holden, Swales, Nairn, 1987). However, strong counter arguments have been put forward, stressing that the criticisms have arisen though the mis-use and mis-understanding of shift-share analysis (Fothergill, Gudgin, 1979a; Stillwell, 1970; Simpson and Bishop, 1972). The main conclusion from this debate is that shift-share is not of itself a theory of regional change, nor does it provide an explanation for such change. However, even the most ardent critics of shift-share analysis, for example Buck (1970), concede that "there can be little objection to shift and share as a descriptive tool which summarises information concisely, and can be of considerable value if employed on a sector by sector basis" (Buck, 1970, 450). This is precisely the purpose for which it has been used here.

and share as a descriptive tool which summarises information concisely, and can be of considerable value if employed on a sector by sector basis" (Buck, 1970, 450). This is precisely the purpose for which it has been used here.

Separate shift-share analyses were carried out individually for the London manufacturing sector at the class and activity heading levels of the SIC, using Great Britain as the benchmark area. Remarkably similar results were generated at each level of industrial disaggregation, and results from the class level analysis are presented here.

Table 4.6 : A shift-share analysis of manufacturing employment change between London and Britain, 1981-1991.

	absolute change	% change
actual change	-325,103	-47.5%
total shift	-157,675	-23.1%
regional share	-167,428	-24.5%
structural component	+34,552	+5.1%
differential component	-192,227	-28.1%

London's manufacturing sector has experienced a significantly higher rate of employment decline than the total national rate of change. The total shift figure for London indicates that the manufacturing sector lost almost 157,700 jobs or 23.1% of total employment over and above the loss of 167,428 jobs that can be attributed to national trends of manufacturing job loss. This is despite the indication of the structural component, which although weak, suggests that on the basis of London's compositional mix in 1981, a relatively less severe employment decline should have been experienced in London than in Great Britain as a whole. The detailed results showed that London's structural advantage lay in the large proportion of jobs within the chemical, paper and printing, and footwear and clothing industries. The total structural effect is, nonetheless, minor and this is due to structural disadvantages particularly related to employment in the manufacture of metal goods, motor vehicles, and transport equipment. In fact the shift-share analysis clearly indicates that the dominant effect in London's severe manufacturing employment decline has been generated by factors other than industrial

structure. These are captured in the high negative value of -28.1% in the differential component. London's manufacturing employment has changed such that its compositional mix, though favourable, has been over-shadowed by factors which have been unfavourable to job growth. London's poor employment performance cannot be explained by the compositional mix of industries.

The profile of London's manufacturing employment change presented in this section is one of consistent and severe decline. The figures presented have verified the finding of previous research discussed in chapters one and two which showed that London's employment loss is largely not sectorally specific, but has, with few exceptions, been a feature of all industrial sectors in the capital, and of both low and high-technology industry. This section has also demonstrated that the structure of manufacturing employment in the capital, cannot explain the severity of decline relative to the nation as a whole. In sum, manufacturing employment decline has been particularly severe in London with no systematic sectoral variation, and it would seem that explanations for the London experience over the 1980s need to be sought in factors inherent to the capital, and in its particular types of manufacturing industries

4.3 Spatial aspects of manufacturing employment change in London, 1981 to 1991.

The following section is concerned with aspects of manufacturing employment change at the borough level. Initially the research for this section was produced graphically in the form of maps. However, this medium of presentation was found to be inappropriate for two main reasons. First, it required the reduction of numerical detail to an unacceptable level due to the need to allocate spatial observations within a limited range of value classes. Second, the London boroughs are administrative and not economic spatial units with wide internal differences, and thus the identification of spatial patterns comprising these units my be unrealistic.

Table 4.7 describes the distribution of borough manufacturing employment in 1981. The table shows the absolute number of manufacturing jobs that existed in each borough in 1981 and the percentage share of London manufacturing jobs that each boroughs contained. If manufacturing jobs had been evenly distributed across the boroughs, each

Table 4.7 : Manufacturing employment in the London boroughs, 1981.

The borough contribution to London manufacturing employme

	absolute no. of jobs	% of total Londo manufacturing jobs
City of London	35005	5.12
Camden	29988	4.38
Hackney	21829	3.19
Hammersmith	10824	1.58
Haringey	15558	2.27
Islington	26002	3.80
Kensington and Chelsea	4009	0.59
Lambeth	11091	1.62
Lewisham	9320	1.36
Newham	19172	2.80
Southwark	24148	3.53
Tower Hamlets	20936	3.06
Wandsworth	11320	1.66
Westminster	43434	6.35
Barking and Dagenham	38796	5.67
Barnet	15845	2.32
Bexley	14724	2.15
Brent	34157	4.99
Bromley	13441	1.97
Croydon	31667	4.63
Ealing	35007	5.12
Enfield	31205	4.56
Greenwich	11480	1.68
Harrow	12581	1.84
Havering	11522	1.68
Hillingdon	29425	4.30
Hounslow	35652	5.21
Kingston	13783	2.02
Merton	21627	3.16
Redbridge	12526	1.83
Richmond	11048	1.62
Sutton	10087	1.47
Waltham Forest	16742	2.45
Greater London Total	683951	

Source : Census of Employment (NOMIS).

would have contain 3.03% of total London jobs. Seven of the 14 inner London boroughs held shares above this hypothetical mean. Only three of these were significantly higher. These are the cities of Westminster and London, which contained 6.4% and 5.1% of London's manufacturing employment, or 43,400 and 35,000 jobs respectively; and the borough of Camden which contained 4.4% of manufacturing employment, some 30,000 jobs. Of the seven inner boroughs with below average shares of manufacturing employment, Kensington and Chelsea stands out as being most deficient, containing only 0.6% of the London total in 1981, or just over 4,000 jobs. However, Wandsworth, Lewisham, Lambeth and Hammersmith also held relatively low shares of between 1.4% to 1.7%.

The largest shares of manufacturing in outer London were to be found in the boroughs of Barking and Dagenham (5.7%), Ealing (5.1%), Hounslow (5.2%), Brent (5.0%), Croydon (4.6%), Enfield (4.6%), and Hillingdon (4.3%). Together, these seven boroughs contained over one third of London's manufacturing employment, some 236,000 jobs. The only other outer borough to have held a share of London's manufacturing above the hypothetical mean of 3.03%, was Merton, but the value was not significantly higher, only 3.2%. Of the 11 outer boroughs which held below average shares of London's manufacturing, all were within a range containing between 1.5% and 2.5%.

The figures in table 4.7 indicate that less variation existed between the outer than inner boroughs. The two broad areas are difficult to compare due to the wide differences that exist in character, size, location and so on. However, the average borough share of manufacturing tends to be slightly higher in outer London, 3.1%, than inner, 3.0%. It is interesting that such a considerable proportion of manufacturing employment was located in the Central London boroughs of the cities of London and Westminster in 1981. The employment data do not distinguish between headquarter or productive functions, so the extent to which the Central London manufacturing reflects office employment rather than factory or workshop employment is uncertain. However, an examination of the industrial structures of the City and Westminster at finer levels of industrial disaggregation reveals the presence of particular industries. For the City, the vast majority of manufacturing employment in 1981 was in the printing and publishing

of newspapers, books and periodicals, which provided over 85% of the City's 35,000 manufacturing jobs. These were the industries which were centred around Fleet Street and the surrounding area, and were involved in productive manufacturing in the sense that they produced material goods for sale. The extent to which the other 15% of manufacturing employment in the City was in headquarters or productive activities is unclear.

In the case of Westminster, again the printing and publishing industry was prominent, providing 11,728 jobs or 27% of manufacturing employment, the footwear and clothing industry provided 5569 jobs or 13%, and the food, drink, and tobacco industry just over 6% of all jobs. These industries which are well established in Westminster are likely to be workshop trades rather than headquarter activities. It is impossible to say from the SIC what proportion of the remaining employment would be in headquarter activities. However, the City of Westminster planning authority have emphasised the importance of productive manufacturing industry in the borough, defining a specialist industrial area to help protect these activities (City of Westminster, 1991). At this stage, it has to be accepted that headquarter activities may be important to some degree, and this issue is returned to later in the thesis and discussed in relation to a variety of data sets in appendix one.

The relative importance of manufacturing employment in each borough in 1981 is shown in table 4.8, expressed both as a percentage of total borough employment, and as a location quotient relative to London as a whole. At one extreme, over 54% of Barking and Dagenham's total employment was in manufacturing, while the same figure for Kensington and Chelsea is just under 5%. The location quotients show that twenty boroughs were over-represented in manufacturing jobs relative to London as a whole, while thirteen were under-represented. Generally, the outer London Boroughs tended to be more specialised in manufacturing employment while inner were less specialised. Only four of the 19 outer London boroughs - Greenwich, Bromley, Barnet and Havering - were under-represented in manufacturing industry and all had location quotients within the 0.5 to 1.0 range. Very high location quotients of between 1.5 and 2.0 were recorded in Merton, Enfield, Brent and Ealing; and Barking and Dagenham was clearly the most specialised borough of all in manufacturing employment with a location quotient of

Table 4.8 : The internal importance of manufacturing in the London boroughs, 198

	manufacturing as %of all jobs	location quotients relative to
City of London	10.91	0.57
Camden	14.38	0.75
Hackney	26.88	1.40
Hammersmith	13.67	0.71
Haringey	25.42	1.32
Islington	22.91	1.19
Kensington and Chelsea	4.82	0.25
Lambeth	8.42	0.44
Lewisham	15.09	0.79
Newham	25.58	1.33
Southwark	18.56	0.97
Tower Hamlets	24.82	1.29
Wandsworth	13.95	0.73
Westminster	8.48	0.44
Barking and Dagenham	54.64	2.84
Barnet	16.39	0.85
Bexley	26.56	1.38
Brent	31.38	1.63
Bromley	16.06	0.84
Croydon	22.06	1.15
Ealing	29.86	1.55
Enfield	36.23	1.89
Greenwich	17.00	0.88
Harrow	22.57	1.18
Havering	18.55	0.97
Hillingdon	27.00	1.41
Hounslow	26.61	1.39
Kingston	22.22	1.16
Merton	36.36	1.89
Redbridge	20.43	1.06
Richmond	20.20	1.05
Sutton	20.29	1.06
Waltham Forest	28.47	1.48
Greater London Total	19.21	

2.84. In contrast, nine of the 14 inner London boroughs were under-represented, including Kensington and Chelsea, Lambeth and Westminster, all of which registered extremely low location quotients of below 0.5. The inner London boroughs which were over-represented were all in inner North East London and all in the 1.0 to 1.5 range. Thus, the seven boroughs specialising most in manufacturing employment were all in outer London, where manufacturing employment contributed between 27 % and 55 % of total employment; and the five specialising least were all in inner London where manufacturing was between 5 % and 14% of total employment. Of course, these specialisation figures are as much an indication of the location of service employment as they are of manufacturing.

To repeat, just under 50% of London's manufacturing jobs were lost over the 1981 to 1991 period. Table 4.9 shows how this change affected the 33 boroughs. With the single exception of Kensington and Chelsea, every borough in London has experienced manufacturing employment decline over the decade. The table confirms the findings of previous research (for example, Dennis, 1978; GLC, 1983) which has shown that manufacturing employment decline is a feature of the whole conurbation. In fact, there is little evidence even of any broad distinctions between inner and outer boroughs in absolute or relative decline. Over the decade as a whole, inner London shed 48.2% of total manufacturing employment, some 136,250 jobs, while outer London shed 47.1% or 188,850 jobs. Thus, no differences in rates of manufacturing employment decline can be identified between the two broad areas.

However, there is still some variation between the boroughs in their manufacturing employment performance. The absolute extent of job loss is highly correlated (0.9) with the number of jobs that existed in the borough in the base year. Given that relatively severe decline in manufacturing employment was experienced in all but one London Borough the existence of this association is not surprising. Table 4.9 shows that the ten boroughs which contained most manufacturing employment in 1981 are the same ten boroughs which lost most jobs, albeit that their relative positions within each ranking may be different. For the purposes of spatial comparison here, it is useful to focus on the rate of change figures.

Table 4.9 : Manufacturing employment change in the boroughs, 1981 to 1991.

	Employment change		Percentage share of London's manufacturing employment		
	abs.	%	1981	1991	% point difference 1981-1991
City of London	-30244	-86.40	5.12	1.33	-3.79
Camden	-15807	-52.71	4.38	3.95	-0.43
Hackney	-10787	-49.42	3.19	3.08	-0.11
Hammersmith	-5371	-49.62	1.58	1.52	-0.06
Haringey	-8185	-52.61	2.27	2.05	-0.22
Islington	-11194	-43.05	3.80	4.13	0.32
Kensington and Chelsea	2175	54.25	0.59	1.72	1.14
Lambeth	-2979	-26.86	1.62	2.26	0.64
Lewisham	-5665	-60.78	1.36	1.02	-0.34
Newham	-9727	-50.74	2.80	2.63	-0.17
Southwark	-7164	-29.67	3.53	4.73	1.20
Tower Hamlets	-4827	-23.06	3.06	4.49	1.43
Wandsworth	-5542	-48.96	1.66	1.61	-0.04
Westminster	-20935	-48.20	6.35	6.27	-0.08
Barking and Dagenham	-18342	-47.28	5.67	5.70	0.03
Barnet	-9801	-61.86	2.32	1.68	-0.63
Bexley	-7055	-47.91	2.15	2.14	-0.02
Brent	-19638	-57.49	4.99	4.05	-0.95
Bromley	-5704	-42.44	1.97	2.16	0.19
Croydon	-16736	-52.85	4.63	4.16	-0.47
Ealing	-16801	-47.99	5.12	5.07	-0.04
Enfield	-14356	-46.01	4.56	4.70	0.13
Greenwich	-5610	-48.87	1.68	1.64	-0.04
Harrow	-4418	-35.12	1.84	2.27	0.44
Havering	-3431	-29.78	1.68	2.25	0.57
Hillingdon	-14457	-49.13	4.30	4.17	-0.13
Hounslow	-16616	-46.61	5.21	5.30	0.09
Kingston	-5334	-38.70	2.02	2.35	0.34
Merton	-9522	-44.03	3.16	3.37	0.21
Redbridge	-6653	-53.11	1.83	1.64	-0.19
Richmond	-4693	-42.48	1.62	1.77	0.16
Sutton	-3324	-32.95	1.47	1.88	0.41
Waltham Forest	-6360	-37.99	2.45	2.89	0.45
Greater London Total	-325103	-47.53			

Source : Census of Employment. (NOMIS)

The City of London shed the largest proportion of manufacturing jobs in both absolute and relative terms. Manufacturing employment declined in the City by over 86%, a loss of some 30,244 jobs over this ten year period. Analysis of the data at finer levels of industrial disaggregation shows that this loss was almost entirely due to the loss of printing and publishing employment as long established newspapers left Fleet Street. Other boroughs with extremely high rates of job loss include Lewisham and Barnet, which each shed over 60% of manufacturing jobs over the decade. Seventeen of the 33 boroughs experienced employment decline of between -45% and -60%, including many of those boroughs which were relatively large manufacturing employers at the beginning of the decade. Of these 17 boroughs, Brent suffered the most severe loss, shedding 57.5% of its total manufacturing employment, almost 20,000 jobs. The other 16 boroughs were clustered in a fairly narrow range of decline from -46% to -52%.

Thirteen boroughs experienced relatively favourable rates of change which were below that for London as a whole. Most of the outer South West London boroughs, as well as Bromley, Islington, Harrow and Waltham Forest shed between 30% and 45% of jobs, while Tower Hamlets, Lambeth, Southwark and Havering, all experienced particularly low rates of decline, shedding between 23% and 30% of total manufacturing employment. In Tower Hamlets and Southwark, more disaggregated data show that lower rates of decline were related to quite significant expansions in the printing and publishing employment due to the movement of printing works out of the City. In Lambeth, lower rates of decline were related to employment growth in the manufacture of office machinery, and in Havering through job growth in chemicals and instrument engineering.

Manufacturing employment actually grew by 54% in Kensington and Chelsea over the decade, although in absolute terms this only involved a net gain of over 2,000 jobs. Further analysis of the figures show that this growth was in the expansion of printing and publishing jobs, and the borough planning authority have verified that this was due to the relocation of the Evening Standard newspaper printing works within the borough boundary.

Table 4.9 also compares the share of London's manufacturing employment in each borough in 1981 with that of 1991, demonstrating the impact of the differentials in relative rates of change upon the borough distribution of manufacturing employment. Generally, the actual borough shares of manufacturing employment have not changed radically. Of course boroughs which declined at a more severe rate than London as a whole have experienced a negative percentage point change in their share of manufacturing, while those declining less acutely have expanded their percentage point shares. However, only four boroughs experienced a change in the share of London's manufacturing employment of over 1% point. These were, the City of London, which actually fell from being the fifth largest manufacturing employer in London in 1981, to being the second smallest in 1991; and Tower Hamlets, Southwark, and Kensington and Chelsea, which all increased their shares of London's manufacturing by over 1% point.

Finally in this section, manufacturing employment change in the London boroughs over the 1980s is analysed in more detail, using shift-share methods to determine the influence of structural and competitive effects. Table 4.10 shows the results of a shift-share analysis of borough manufacturing employment change, using Greater London as the benchmark area. The results presented were generated at the activity heading level of the SIC. Finer levels of industrial disaggregation are generally thought superior when small areas are the focus of interest (Fothergill, Gudgin, 1979a). This is because the actual composition of more aggregated categories are likely to vary widely when fewer firms are involved. For example, any borough's manufacturing may be dominated by a small number of large employers in a very specific manufacturing sector and this could constitute either a structural advantage or disadvantage. At the more aggregated level such advantages or disadvantages would be hidden because in effect the employment in one specific sector would be spread across a number of sectors and thus the structural component would not be properly represented. Fothergill and Gudgin (1979a) point out that this problem in the representation of the structural effect is unlikely to be relevant at the regional level and above since "no one employer is likely to dominate employment enough to distort the results" (Fothergill, Gudgin, 1979a, 313).

Table 4.10 : Shift-share analysis of manufacturing employment , London boroughs - Greater London, 1981 - 1991.

	regional share (absolute)	total shift (absolute)	(%)	structural component (absolute)	(%)	differential component (absolute)	(%)
City of London	-16638	-13606	-38.9	127	0.4	-13730	-39.2
Camden	-14253	-1554	-5.2	3768	12.6	-5320	-17.7
Hackney	-10375	-412	-1.9	468	2.1	-878	-4
Hammersmith	-5145	-226	-2.1	-466	-4.3	241	2.2
Haringey	-7395	-790	-5.1	-1261	-8.1	471	3
Islington	-12359	1165	4.5	823	3.2	343	1.3
Kensington and Chelsea	-1905	4080	101.8	680	17	3400	84.8
Lambeth	-5272	2293	20.7	796	7.2	1497	13.5
Lewisham	-4430	-1235	-13.3	-620	-6.7	-615	-6.6
Newham	-9112	-615	-3.2	841	4.4	-1455	-7.6
Southwark	-11478	4314	17.9	2570	10.6	1744	7.2
Tower Hamlets	-9951	5124	24.5	-281	-1.3	5405	25.8
Wandsworth	-5380	-162	-1.4	41	0.4	-202	-1.8
Westminster	-20644	-291	-0.7	4113	9.5	-4402	-10.1
Barking and Dagenham	-18440	98	0.3	-874	-2.3	975	2.5
Barnet	-7531	-2270	-14.3	-2831	-17.9	561	3.5
Bexley	-6998	-57	-0.4	-832	-5.7	776	5.3
Brent	-16235	-3403	-10.0	489	1.4	-3890	-11.4
Bromley	-6389	685	5.1	565	4.2	120	0.9
Croydon	-15051	-1685	-5.3	-751	-2.4	-932	-2.9
Ealing	-16639	-162	-0.5	-3089	-8.8	2928	8.4
Enfield	-14832	476	1.5	-3510	-11.2	3987	12.8
Greenwich	-5456	-154	-1.3	-123	-1.1	-30	-0.3
Harrow	-5980	1562	12.4	368	2.9	1194	9.5
Havering	-5476	2045	17.7	160	1.4	1886	16.4
Hillingdon	-13986	-471	-1.6	-1445	-4.9	975	3.3
Hounslow	-16945	329	0.9	-582	-1.6	913	2.6
Kingston	-6551	1217	8.8	697	5.1	520	3.8
Merton	-10279	757	3.5	576	2.7	182	0.8
Redbridge	-5954	-699	-5.6	-997	-8	298	2.4
Richmond	-5251	558	5.1	455	4.1	103	0.9
Sutton	-4794	1470	14.6	54	0.5	1417	14
Waltham Forest	-7957	1597	9.5	76	0.5	1522	9.1

Seventeen of the 33 boroughs have negative total shift values, and have thus experienced less favourable manufacturing employment change than they would have done had they changed at the same rate as London as a whole. However, what is of particular interest are the influences of structural and competitive in borough employment change. From the shift-share results presented in table 4.10, boroughs may be categorised in the following way :

Table 4.11 : A categorisation of boroughs on the basis of a shift-share analysis of manufacturing employment change between the boroughs and London, 1981-1991.

	Inner London	**Outer London**
+ve structural +ve differential	Islington, Southwark, Kensington and Chelsea, Lambeth	Bromley, Harrow, Havering, Kingston, Merton, Richmond, Sutton, Waltham Forest
+ve structural outweighs -ve differential		
+ve differential outweighs -ve structural	Tower Hamlets	Barking and Dagenham, Enfield, Hounslow
-ve structural outweighs +ve differential	Hammersmith, Haringey	Barnet, Bexley, Ealing, Hillingdon, Redbridge
-ve differential outweighs +ve structural	City of London, Camden, Hackney, Newham, Wandsworth, Westminster	Brent
-ve differential +ve structural	Lewisham	Croydon, Greenwich

The boroughs in the top three sections of the categorisation above have positive total shifts, or in other words they have achieved more favourable employment change than London as a whole, the bottom three less favourable. The above categorisation shows that 12 boroughs have registered positive total shifts in situations where the influence of the structural and differential components have both been positive. For these boroughs, the performance of manufacturing employment over the decade has been more

favourable than would have been expected solely on the basis of industrial structure, and for Kensington and Chelsea, Lambeth, Sutton, Harrow, Havering and Waltham Forest the differential was the dominant component within the total shift. In fact, strong differential components have been very influential in creating favourable employment change amongst the boroughs. Of the remaining 4 boroughs with positive total shifts, strong positive differentials have worked against negative structural components to produce favourable rates of change. The implication of this are that for boroughs in the top three sections of the categorisation, industrial structure alone cannot explain employment performance, and some competitive or locational attributes have worked to produce favourable rates of manufacturing employment change in relative terms.

Of the 17 boroughs which experienced less favourable rates of employment change, industrial structure has been either entirely or partly influential in the poor performance of 10 boroughs. Lewisham, Croydon and Greenwich, all registered negative structural and differential components which contributed more or less equally to produce total shifts of -13%, -5.3 %, and -1.3 % respectively. The influence of industrial structure is therefore apparent in all three cases, though locational or competitive factors have also been important in producing less favourable employment performances than would have been expected. In the other seven boroughs where industrial structure was influential, positive differential components worked against the negative influence of industrial structure to produce employment declines that were more favourable than expected. In Ealing, Bexley and Hillingdon, the influence of the differential was quite dramatic, reducing the effect of negative structural components to produce marginally negative total shifts. For the remaining four boroughs with negative total shifts, the differential was the sole influence in decline. Favourable structural components were displaced by stronger competitive effects which worked to escalate manufacturing employment decline.

The categorisation used above is useful in examining the different ways in which the structural and differential effects have featured in employment change, however, it does not make clear the spatial manifestation of these effects. Returning to table 4.10, and considering firstly the structural components, it can be seen that the borough distribution of negative and positive values is diverse. Of the 33 boroughs, 19 registered positive

values for the structural component, a disproportionate number of which (10) were in inner London, and five of these inner boroughs held the highest positive structural values. Only four inner London boroughs had negative structural component values, and of these only in Haringey and to a lesser extent Lewisham were they significant, with negative values of 8.1% and 6.7% respectively. However, an inner outer London distinction in structural values is not readily identifiable. While inner London boroughs have in general tended towards positive structural values, the outer London boroughs are clearly divided in the direction and influence of the structural component. Nine outer London boroughs had positive structural components and ten negative. The table shows no broad consistency in the outer borough structural values.

In contrast, the distribution of the differential component values shows a relatively clear geographical pattern. In interpreting the geography of this component, however, it is useful for the moment to ignore the official definition of the inner and outer London boroughs. Considering the figures in table 4.10, and referring to Figure 1.1 in chapter one, it can be seen that with the exception of Croydon, all boroughs on the periphery of London and many directly adjacent to these have registered positive differential shifts; while a ring of negative differential components, broken in parts, can be identified within the conurbation running from Brent to Newham in the North, excluding Islington and Tower Hamlets, and from Greenwich to Wandsworth in the South, excluding Southwark and Lambeth. Consistencies in the spatial distribution of the differential component suggests that locational or competitive factors have influenced rates of manufacturing decline in different ways within London. In the peripheral and adjacent boroughs they have operated such as to produce more favourable rates of change, and in the non-peripheral boroughs less favourable rates of change.

Anomalies do exist within this general pattern. Croydon was the only peripheral borough to register a negative differential component. Closer examination of the data provides little evidence to explain exactly why this should have happened, though it would seem that the bulk of the negative differential was composed of strong negative values in electrical and electronic engineering and in the manufacture of office machinery. Six of the officially categorised inner London boroughs also have positive differential values. For Kensington and Chelsea the strong positive differential is almost

entirely explained by the movement of the Evening Standard to the borough. Also, in Hammersmith and Islington the printing and publishing classes of the SIC had very high differential values, though in these two cases negative differentials in almost every other manufacturing sector produced overall marginal components. In the other inner London boroughs with positive differential values: Tower Hamlets, Southwark and Lambeth, the composition of the positive differential was more multi-sectoral, including electrical and electronic engineering, mechanical engineering, the chemical industry, and food drink and tobacco. However, it appears that in general overall positive differential values in the inner London boroughs are very narrowly sectorally composed, with most industrial manufacturing sectors registering negative values. The result of this shift-share analysis have to be interpreted with caution. The values of the differential are extremely sensitive at the borough level, and it should be borne in mind that when analysing small areas with such little manufacturing employment, the inward movement of one establishment over the period can have the effect of creating positive differentials when other manufacturing sectors have declined at a higher rate than London as a whole.

Despite these anomalies, if the official definition of inner and outer London is ignored, then of the ten boroughs which registered negative differential component values, nine could be described as non peripheral, with only Croydon as the exception. This shows a clear and consistent geographical distinction in borough propensity towards favourable and less favourable rates of manufacturing employment decline.

Several factors could explain what the negative differential values in London as a whole, and in particular in inner London, are measuring. It could be indicative of the urban space constraints of London, or of the growth of service sector activity causing the spatial displacement of manufacturing activity, or perhaps of the high costs particularly in the inner area relative to other cities. From the data used in this chapter it is impossible to answer these questions, although they are addressed elsewhere in the thesis. What can be concluded from the analysis presented in this section is that London is losing manufacturing employment at a most severe rate , and that this loss is largely a result of locational influences which have been shown to be most marked in inner London. However, severe decline in manufacturing employment has affected all boroughs. While employment in manufacturing has halved and the relative

shares of the boroughs in this decreased employment has changed in detail, with a few notable exceptions, overall changes have not been so drastically different between boroughs as to radically alter the geography of manufacturing employment in London. Essentially, industrial decline is a metropolitan characteristic, with only one radical departure at the borough level from the general conurbation trend.

4.4 Conclusions.

This chapter has demonstrated the scale and extent of job loss in the London manufacturing sector over the 1981 to 1991 period. It has been shown that the fall in the demand for manufacturing employment in London has been instrumental in creating radical shifts in the overall composition of London's employment. With few exceptions, this decline has affected all manufacturing industries within the capital, and has been a consistent feature of change in all but one of the 33 boroughs. In addition, this chapter has demonstrated that London's manufacturing employment has declined at a much faster rate than the nation as a whole, and that this differential cannot be explained by the compositional mix of industries within the capital. As regards employment, London has deindustrialised in absolute and relative terms in the most severe way.

The results of this chapter accord with the theoretical perspectives reviewed in chapter two which emphasised the severe and consistent decline of urban manufacturing. The explanations for London's manufacturing employment decline cannot focus on internal sectoral or spatial aspects, but must seek to address why it is that employment has been shed in all sectors of manufacturing and in all areas of London. This scale and consistency of decline, particularly at the borough level, may suggest that employment protection policies for manufacturing have not been practised in the capital over the 1980s, or if they have, that they have been extremely unsuccessful. The following chapter presents the results of a survey of the London LPAs, which explores these and other related issues.

Chapter 5 : The planning response to manufacturing employment decline in London : the borough planning authority perspective.

5.0 Introduction.

Chapter three argued that the British town and country planning system, through the powers of development control, allows LPAs to respond to, and possibly influence, the nature of economic change within their areas. Under circumstances of industrial decline LPAs may adopt a restrictive approach towards changes of use from industrial land and premises in the hope of protecting manufacturing jobs. Previous literature suggests that these policies may have been used in London and chapter three speculated as to their importance. However, chapter four has shown that severe decline has comprehensively characterised London's manufacturing change over the 1980s, both sectorally and spatially. This would suggest that London planning authorities have either not tried to protect manufacturing jobs, or have been remarkably unsuccessful in doing so.

This chapter explores the LPA policy response to manufacturing employment decline in London over the 1980s. It presents the results of a postal questionnaire survey designed to explore the ways in which local authority land use planning controls have been used to influence manufacturing employment decline in London. The chapter begins by discussing aspects related to the scope of the survey. Results are then organised into four main sections. First, the borough planning authority perspectives on manufacturing employment decline are outlined. Planning policies that were developed to protect manufacturing jobs in London are next discussed, highlighting differences in LPA approaches. Section 5.5 then goes on to consider how important these policies actually were to the LPAs, how much emphasis they were awarded in development control practice, and the reasons why LPAs believe that they have been successful or not. The implications of land use regulation for manufacturing employment change are then investigated further within the context of the introduction of the business use class legislation. Section 5.7 then reflects upon the research implications of the main findings of the survey, and discusses borough perceptions as to the main mechanisms underlying manufacturing employment decline in London, before conclusions are drawn.

5.1 The scope of the survey.

The purpose of the survey was to investigate how London LPAs had responded to manufacturing employment decline over the 1981 to 1991 period, focusing in particular on the use of employment protection policies. The survey sought to determine the extent of their use, how they have been implemented, and why LPAs view these policies to have been successful or not. The survey was predominantly concerned with these general themes, although it also asked LPAs to comment on issues surrounding the introduction of the business use and class and related permitted development to provide a further means of addressing the issues raised in the survey. In fact, the emphasis on these changes can be compared in many ways to a 'case study', since they have effectively created a 'policy-on' and 'policy-off' situation for the regulation of specific land use changes related to manufacturing industry. An opportunity is therefore presented to actually ask LPAs what difference it makes to regulate land use, albeit for a specific case, and also to consider the land use implications of deregulation

The use of a survey-based approach to the research is attractive because it provides a potentially rich source of information which would otherwise not be available. However, in relation to the particular issue to be examined, there were two main reasons for the adoption of this particular methodology. First, it was anticipated that this was likely to be the most appropriate means of directly addressing the relationship between land use planning controls and manufacturing employment decline. Planning policy, or the 'output' of the planning system is extremely difficult to examine or evaluate empirically, largely because it is non-quantifiable. Given the highly discretionary nature of the British planning system, even the aspects of planning which appear to be capable of empirical analysis, such as development control data, actually indicate little about planning policy because there could be any number of reasons underlying any development control decision in the individual case. In essence, the issues to be explored in this chapter are qualitative, and although they may have quantifiable impacts, they must be explored through qualitative research techniques. It is therefore

not the intention here to attempt a quantitative evaluation of the employment effect of planning policy.[1]

The second reason for the use of a survey method, is that it is capable of generating much anecdotal evidence and gathering valuable local knowledge. Existing published data only tells so much about what is happening to London's manufacturing industry, and it was thought that the survey would be of considerable value if it could be used to complement, and provide a sound basis for, further empirical investigations. Thus, the data obtained from the survey will be useful in guiding the empirical research, in developing testable hypotheses and in validating and reflecting upon results obtained in this thesis, and in previous literature.

This highlights an important aspect about the scope of the survey. It is not intended that the survey should generate quantitative data, or that it should be available for statistical analysis. The issues to be investigated are not of a quantifiable nature, and are more appropriately addressed by discussion of the answers given by LPAs, rather than by attempting to determine any statistical significance. The survey population is relatively small, and thus allows for a detailed discussion of the results obtained rather than the use of statistical methods for data reduction.

A final issue that requires consideration concerns the stringent limitation on the scope of policy analyses that arises in the absence of knowledge about the 'counter-factual'

[1] Two attempts at quantitative evaluation were in fact made in early stages of the research. First, following a method similar to that used by Fothergill and Gudgin (1979b) and Moore and Rhodes (1973), it was thought that the boroughs could be categorised in terms of the 'intensity' or 'degree' to which they had pursued employment protection policies at different points in time, given responses in the survey. For each category, 'expected' average employment change figures could be calculated and applied to the boroughs within, having standardised for the effects of industrial structure, and could be compared to actual employment change figures to determine the relevance of the categories created and by implication the importance of policy stances. However, results generated in this way were unconvincing and the categorisation was not as straightforward as had been anticipated. The second quantitative method attempted used development control data to construct indices for the boroughs reflecting the degree of 'restraint' in planning decisions towards change of use from manufacturing. This index was included in a regression analysis model, along with other variables thought to influence employment change, to test the significance of planning decisions. However, the absence of data required to reflect some known important influences on employment change at this detailed spatial level seriously undermined the validity of the results generated. In general, attempts at quantitative evaluation were pursued no further because it appeared that boroughs were particularly prone to enormous employment shifts from unknown 'non-policy' effects, and that the impacts of recession at the end of the eighties and the absence of knowledge about the time lag effects of policy, placed serious limitations on the scope for quantitative investigations.

(Gould, 1969; Prince, 1971). The counter-factual refers to a hypothetical situation which would have occurred had the events to be examined not taken place. For the present research, the counter-factual problem emerges when attempting to investigate the manufacturing employment effects of planning policy in the absence of knowledge about what would have happened to employment had policy not been in operation. This hypothetical situation of 'no policy' cannot be accurately determined. As Gould (1969) remarks "a counter-factual by its very nature can never be subjected to any empirical tests by realising its antecedent" (Gould, 1969, 196). The problem of the counter-factual is prominent in policy evaluation research. For example, in seeking to evaluate the effects of regional policy in Britain, Moore and Rhodes (1973) pointed out that the greatest difficulty lay in attempting to measure what would have happened had there been no regional policies, or policies of some other intensity; while Diamond and Spence (1983) note that much regional policy evaluation in general has suffered from "the most fundamental conceptual problem.....[the] assumption about the behaviour of employment in the counter-factual or expected employment situation" (Diamond, Spence, 1983, 52).

In presenting the survey results, it is recognised that the problem of the counter-factual places important limitations on the robustness of any conclusions reached about the actual effects of employment protection policies. However, as mentioned previously, it is not the intention in this chapter to attempt a strict evaluation of the employment effects of planning policy. Instead, the survey seeks to attain the LPA perspective on the use and success of these policies and the reasons why LPAs hold these views. Thus from the information generated in the survey, employment change in the absence of policy remains only the opinion of local experts, in this case the LPAs, and does not attempt to reflect the actual counter-factual. The use of the B1 business use class 'case study' is, however, important in this respect. By creating a practical 'policy-on' and 'policy-off' situation it is hoped that the inclusion of this issue can go some way towards allowing the LPAs to reflect more accurately on the importance of land use planning policy.

Having consulted with LPAC and four of the London borough LPAs over the content and scope of the proposed survey, a preliminary questionnaire was designed and pilot-tested in the hope of identifying any important design deficiencies. The four borough planning authorities that had assisted with the construction of the survey at the consultation stage were chosen as the pilot population and a survey form was mailed to each. (see appendix 4) The returned questionnaires were adequately answered and the final questionnaire was drawn up. The only changes in the questionnaire from pre to post-pilot stage were first, that additional space was allocated to allow for written explanations to answers given, and second, that some points of clarification raised by the pilot population were incorporated in the survey form. Thus, the pilot-survey pre-test suggested that the questionnaire required minimal modifications before being sent to the borough LPAs. To some extent this may indicate the usefulness of the early consultation over survey design undertaken with the four LPAs and LPAC, particularly in helping to construct a relevant and answerable survey, and this would be consistent with the advice of Kidder and Judd (1986).

The survey was then sent to all 33 planning authorities in the Greater London area with a covering letter which explained broadly the purposes of the study and asked the LPAs

for their assistance in this matter. Of the 33 questionnaires, 24 were returned, thus yielding an overall response rate of 73%, which is particularly successful given that response rates to surveys are typically very low (Moser, Kalton, 1987). The nine borough LPAs that did not respond were Lewisham, Newham, Tower Hamlets, Wandsworth, Brent, Ealing, Enfield, Hounslow, and Merton. There is no indication of any systematic response bias in terms of the geographical or political characteristics of non-responding boroughs. Indeed, the survey has been relatively successful in capturing a diverse cross-section of London boroughs and it is thought unlikely that the non-responding boroughs exhibit extreme characteristics which are not adequately represented by the types of boroughs that did respond. In addition, it should be borne in mind that the survey population is relatively small and for this reason detail is sought from each of the responding 'units' obviating the need for the generalisation of results across the population. In this respect the issue of response bias takes on slightly less importance than it would in a survey of larger scale where the generalisation of results is essential.

Further aspects of the survey design and the precise methodology used are described in appendix four, and a sample copy of the questionnaire sent to the boroughs is reproduced. The discussion of survey results in the following sections is guided by the most appropriate analytical structure for this chapter, and does not follow the actual organisation of the questionnaire.

5.2 Borough planning authority perspectives on manufacturing employment decline.

The use of planning controls to influence manufacturing employment change, is likely to be guided by the extent to which any authority is actually concerned about industrial job loss. Manufacturing employment change data at the class level of the SIC for the period 1981 to 1991, were reproduced for each borough and attached to the survey questionnaires. The LPAs were asked to refer to the data for their areas, and to express the authorities view of manufacturing job loss in terms of it being : extremely disadvantageous, disadvantageous, unimportant or beneficial.[2] The results of answers to question one are shown in table 5.1.

[2] In the case of Kensington and Chelsea the question had to be rephrased because, as was shown in the previous chapter, manufacturing employment actually increased in this borough over the 1981 to 1991 period. This increase was entirely within the printing and publishing sector. Kensington and Chelsea LPA were asked to ignore this specific job growth for the moment, and to answer question one with respect to the other sectors of manufacturing industry in which employment had been declining over the decade.

Table 5.1 : How does the borough planning authority view manufacturing employment decline ?

	extremely disadvantageous	disadvantageous	unimportant	beneficial
City of London			1	
Camden	1			
Hackney	1			
Hammersmith	1			
Haringey	1			
Islington	1			
Kensington and Chelsea	1			
Lambeth	1			
Southwark		1		
Westminster		1		
Barking and Dagenham	1			
Barnet		1		
Bexley		1		
Bromley			1	
Croydon	1			
Greenwich	1			
Harrow		1		
Havering		1		
Hillingdon		1		
Kingston		1		
Redbridge		1		
Richmond		1		
Sutton		1		
Waltham Forest		1		
Total	**10**	**12**	**2**	**0**
Percentage	**42%**	**50%**	**8%**	**0%**

Twenty-two of the 24 respondents, just under 92% of LPAs, viewed the loss of manufacturing jobs as either extremely disadvantageous or disadvantageous. No boroughs thought that the loss of manufacturing jobs was beneficial, and only the City and Bromley considered it unimportant. Interestingly, the results indicate that inner London boroughs are generally more concerned about manufacturing job loss than outer boroughs. Of the responding inner boroughs, 70% felt that manufacturing was extremely disadvantageous, while only 21% of outer boroughs expressed such a degree of concern. However, the clear indication from table 5.1 is that manufacturing job loss is generally an important issue for London planning authorities.

The LPAs were asked to provide a written explanation for the answer given to this question. The City and Bromley, who regarded manufacturing job loss as unimportant, both stated the primary reason that service sector jobs were more suitable within their

areas. The City LPA stressed that office-based financial and business services development was of much greater importance, and that manufacturing was largely unimportant to the economic composition of the City. Indeed, the City felt that non-office manufacturing uses were much better suited to neighbouring boroughs, which were "less densely developed and better suited to the bulk movement of raw materials and finished goods."

The dominant concern amongst the remaining 22 respondents was that manufacturing employment decline was serving to reduce overall levels of employment within the boroughs, resulting in unemployment and a much more limited range of job opportunities. There was also a general consensus that manufacturing industries were more likely to employ local residents than other forms of economic activity, and that the loss of manufacturing jobs had created a mismatch between resident skills and local employment opportunities. Many respondents specifically mentioned that this mismatch raised distributional and equity issues, with particular sections of the population bearing the brunt of the consequences of manufacturing employment decline. For example, Hackney stated that "small-scale manufacturing businesses are a way of providing self-employment for those (e.g. ethnic groups) otherwise excluded from the workplace", while Lambeth pointed out that "manufacturing predominantly employs local people. The decline in manufacturing employment within the borough has resulted in large numbers of unemployed whose skills are not easily transferred to new service jobs."

Two of the respondents highlighted important local economy consequences that have arisen from manufacturing loss. Haringey LPA stated that "Haringey, Tottenham in particular, has historically been a centre of manufacturing. The entire local economy used to be organised around it. With the decline of manufacturing the borough has lost its lead economic force." Westminster were apprehensive about the multiplier effects of manufacturing decline pointing out that "the retention of specialist manufacturing activity in Westminster is important in the functioning of important sectors of the West End economy e.g. tailoring, film production, sound recording, and photography." Other authorities, including the outer boroughs of Harrow, Redbridge, Kingston and Hillingdon, were concerned about the increasing 'out-commuting' from the borough that has resulted from the reduced internal demand for manufacturing labour. In fact the

London borough of Harrow LPA stated that one important concern about manufacturing job loss was that it had led to travel-to-work behaviour which was not "in line with the principles of PPG 13", being the planning policy guidance note concerned with reducing the need to travel through land use and transport planning.

Unemployment and narrowing job opportunity are generally considered to be the aspects of manufacturing employment decline which are of central importance. While Redbridge and Sutton LPAs qualified their concerns over these issues by adding that the loss of industrial employment might be important in attaining an improved residential environment, the general indications are first, that London's LPAs are most concerned about manufacturing job loss, and second that they predominantly view this issue in terms of equity and distributional concerns.

5.3 Planning policies for manufacturing jobs in London in the 1980s.

This section explores the types of land use policies that borough LPAs developed with respect to manufacturing employment change over the 1980s. Previous literature, reviewed in chapter three, has provided an indication of the types of policies the survey should seek to investigate. The extent to which boroughs had tried to 'protect manufacturing' jobs was of central importance, however the survey also asked about other policies that London LPAs had towards manufacturing industry.

The first question posed in this section sought to determine how many of the LPAs had pursued planning policies with the intention of protecting manufacturing jobs over the 1980s.

Table 5.2 : Did the planning authority develop policies with the specific intention of protecting manufacturing jobs in the borough ?

	yes	no	political control * 1982-1986	1986-1990
City of London	1		N/A	N/A
Camden	1		LAB	LAB
Hackney	1		LAB	LAB
Hammersmith	1		NOC	LAB
Haringey	1		LAB	LAB
Islington	1		LAB	LAB
Kensington and Chelsea	1		CON	CON
Lambeth	1		LAB	LAB
Southwark	1		LAB	LAB
Westminster	1		CON	CON
Barking and Dagenham	1		LAB	LAB
Barnet		1	CON	CON
Bexley		1	CON	CON
Bromley		1	CON	CON
Croydon		1	LAB	CON
Greenwich		1	LAB	LAB
Harrow	1		CON	CON
Havering	1		CON	NOC
Hillingdon		1	CON	NOC
Kingston	1		CON	NOC
Redbridge		1	CON	CON
Richmond	1		NOC	LIBDEM
Sutton	1		CON	NOC
Waltham Forest		1	NOC	LAB
Total	**16**	**8**		
Percentage	**67%**	**33%**		

* LAB = labour, CON = Conservative, LIBDEM = Liberal Democrats, NOC = no overall control, N/A = not applicable.

Table 5.2 shows that 16 of the 24 LPAs, or two-thirds, attempted to respond to manufacturing job loss in this way. Thus, in contrast to what may have been expected given the results of the spatial analysis of manufacturing employment change presented in the previous chapter, planning mechanisms have been widely used in London to respond to employment decline. Columns four and five of table 5.2 indicate the political orientation of the borough councils over the 1980s. It was thought that the political or ideological stance of the boroughs might provide an explanation for why some chose to intervene to protect manufacturing jobs while others did not. However, it would appear that this is not a consistent explanatory variable. Seven of the ten councils under Labour control over the 1980s, and six of the twelve under Conservative control, had developed employment protection policies for manufacturing. It is therefore not possible to

attribute political motivation to the development of employment protection policies, and this is consistent with results obtained for the nation as a whole by Oatley (1991).

What perhaps may be a more important factor is the location of the borough within the London conurbation. For example, table 5.2 shows a broad difference between the inner and outer London boroughs. While all inner borough respondents pursued employment protection policies for manufacturing industry, including the City LPA, only 6 of the 14 outer London borough respondents, under 50%, explicitly attempted to protect manufacturing jobs. There are, many reasons why boroughs may, or may not, have developed policies for manufacturing employment, but one locational factor that may be important is the extent of development pressure that exists from other uses, since this is likely to be more intense in inner than outer London.

The inner-outer London distinction raises another important issue. The differential components of the shift share analysis presented in table 4.9, indicated that after standardising for industrial structure, inner London boroughs were more prone to less favourable rates of employment change than outer boroughs. Yet it can be seen from table 5.2 that all inner London respondents pursued employment protection policies. Thus, as a general point, it would seem that many London LPAs have tried to protect manufacturing jobs, but for whatever reasons, have been largely unsuccessful in doing so.

There are many issues that need to be taken into account before reaching any conclusion about the influence of planning on employment change. The scope of the policies, particularly with regard to the actual types of policies, the areas to which they applied, and the sectors of industry which the policies sought to protect, are of critical importance. The boroughs were asked to outline the specific types of policies that they had pursued with the intention of protecting existing manufacturing jobs over the 1980s. As mentioned previously, 16 of the 24 respondents had developed employment protection policies, however only 15 were able to provide detailed information about the policies, the exception being the borough of Haringey. Many authorities sent excerts of policies from plans, others simply outlined their main approaches Examples of the protection policies pursued by each LPA are summarised in table 5.3. In three of the 15

cases, the City, Harrow and Kingston, the policies were designed to protect not only manufacturing jobs but also warehousing employment. These two uses, and their employment generating effects, appear to have been treated as much the same for planning purposes, with no indication of any preference between the two uses being given within policy statements.

Table 5.3 Examples of land use planning policies for the protection of manufacturing employment in fifteen London boroughs over the 1980s.

City of London	to ensure continuity in the provision of suitable accommodation for warehousing and industry
Camden	change of use or redevelopment of industrial floorspace for any other use will not be permitted
Hackney	to protect existing manufacturing firms and jobs
Hammersmith	to retain land for employment generating uses and for industrial uses within specified employment zones
Islington	Council will not normally permit development which results in a loss of industrial floorspace
Kensington and Chelsea	strong presumption to refuse planning permission for applications involving the loss of an existing industrial use particularly within the specified industrial areas
Lambeth	to restrict changes of use from industrial land and buildings
Southwark	planning permission will not normally be granted for either development proposals, or a change of use, that will result in a loss of industrial floorspace (within and outside Industrial Consolidation Areas)
Westminster	general policy to protect manufacturing uses (1980-1988) to retain industry in the Specialist Industrial Area (1988 to present)
Barking and Dagenham	protection of manufacturing jobs in specified industrial areas
Harrow	resist land use change from industrial and warehousing uses (particularly in industrial/warehousing areas)
Havering	to resist proposals which would involve a change of use from industrial land or floorspace. or land which in the Council's opinion is suitable for industrial development, to other uses.
Kingston	within the industrial and warehousing areas premises and sites will be retained in industrial/warehousing
Richmond	permission is not normally granted for a change of use or redevelopment for other purposes of industrial premises
Sutton	to protect established industrial sites

A theme common to all policies in table 5.3 is that they all seek to protect manufacturing use by implying a 'restrictive' stance in development control decisions. However, detailed differences are apparent in the wording of the main policies, particularly with respect to the clarity of the LPA intentions. At one extreme, the policies of Camden and Kensington and Chelsea LPAs are expressed strongly and in a 'negative 'fashion, stating clearly, that planning permission which involves a loss of

existing manufacturing uses will not be granted. At the other extreme the City of London LPA policy has the more modest, and less specific, intention of "ensuring continuity in the provision" of floorspace for industry. In between these two extremes, the policies of LPAs vary in the degree of intensity to which they stress the objective of protecting manufacturing jobs. Islington, Southwark and Richmond have fairly strong policies which will "not normally" grant permission for applications which involve a loss of industrial floorspace, while the remaining eight LPAs pursue objectives which are more ambiguously worded, for example, stating an intention simply to 'protect', 'resist', 'restrain', or 'retain', without mention of the likely development control outcome.

However, for most authorities the main employment protection policies do not represent the only planning statement, and ambiguity is often accompanied by related statements of clarification. LPAs were asked to outline any exceptions or qualifications to the employment protection policies. The responses indicated that while employment protection is clearly important to the LPAs, a number of related concerns enter into policy, and development control decisions. These include desires to reduce the environmental impacts of industrial uses, to enforce the separation of 'non-conforming' uses, to ensure an adequate up-take of land, or to ensure that adequate provision still exists for the expansion of other employment generating uses. For example, in addition to Camden LPA's main policy objective outlined above, they also state that "changes of use from industrial to other uses may be allowed if the premises or site has been vacated and a reasonable attempt to find alternative acceptable industry has been made." Likewise, in Kensington and Chelsea, the "strong presumption to refuse planning permission for applications involving the loss of an existing industrial use" stands, although if industry is creating 'nuisance' in a residential area then change of use will be allowed. In most cases, authorities have sought to protect manufacturing employment, but have done so within the constraints of also avoiding the emergence of 'negative' externalities in other areas of land use planning concern.

Another important dimension of employment protection policies lies in the extent to which they have been orientated through a geographical focus. Some authorities have developed employment protection policies which express a general objective for the

borough as a whole. Others have approached the issue through the definition of particular industrial areas within the borough. For example, Hammersmith, Kensington and Chelsea, Southwark, and Harrow all seek to protect existing manufacturing employment, although there is an indication that such policies may be more strongly adhered to when any application to be decided falls within a defined industrial area. In the case of Barking and Dagenham, Kingston, and Westminster, employment protection policies have been developed which are expressed only for particular areas within the boroughs. In other instances, specific areas may have not been defined, although the LPAs have adopted policies which suggest that industrial land use change will be more strongly resisted in areas of predominant existing use. As with the policy qualifications outlined above, these spatial strategies can generally be conceptualised as attempts to minimise negative externalities.

Manufacturing industry is not an homogenous group, and it was anticipated that LPAs may attach different degrees of importance to the protection of jobs in different sectors of industry. If this was the case, then the operation of different types of protection policies in different areas of London could be determined, thus obtaining a better perspective on the scope to which planning control is applied. Authorities were asked whether the policies they developed had attempted to protect all manufacturing jobs, or whether they had placed more importance on some sectors of manufacturing than others. Table 5.4 show responses to this question.

Table 5.4 : Do the LPAs employment protection policies place more importance on some types of manufacturing than others ?

	yes	no
City of London	1	
Camden		1
Hackney		1
Hammersmith		1
Haringey		1
Islington	1	
Kensington and Chelsea		1
Lambeth		1
Southwark		1
Westminster		1
Barking and Dagenham	1	
Harrow		1
Havering		1
Kingston		1
Richmond		1
Sutton		1
Total	**3**	**13**
Percentage	**19%**	**81%**

Of the 16 boroughs which pursued employment protection policies, the vast majority, over 81%, were concerned with manufacturing jobs generally and did not distinguish between different types of manufacturing employment. Only the City of London, Islington and Barking and Dagenham claimed to have placed more importance on some types of manufacturing activity than others. A 'follow-on' question asked the LPAs to consider a breakdown of employment at the class level of the SIC, and to attempt to specify from this breakdown what types of manufacturing were either very important, important, or not important in policy terms. The City of London LPA indicated that all categories of manufacturing employment defined at this level of the SIC were unimportant, although they did specify that they had generally intended that policy should protect 'light' manufacturing industry such as printing, machinery repair, and the fur industry. Islington LPA were unable to provide detailed information, although again the indication is that light industry was more important. Barking and Dagenham specified only two sectors of employment that were unimportant in policy terms, both of which were involved in extraction, and the general indication was that while degrees of importance existed between different sectors, the loss of just about all manufacturing jobs that existed in the borough was considered important. Thus, most LPAs have pursued 'blanket' protection policies, and it seems fair to say that, with the exception

only of the City and Islington, the LPAs considered manufacturing generally to have been of importance. In this respect, there is little indication that any differences in the effectiveness of employment protection policies could be explained by their sectoral coverage.

The survey also sought to identify other policies for manufacturing that had been developed by the London LPAs over the 1980s. The final results to be discussed in this section were obtained by asking each authority to outline any land use planning policies for manufacturing, or related to manufacturing, which they had developed over the 1980s, but which were not solely concerned with employment protection. In addition to the fifteen boroughs that had attempted to protect manufacturing jobs, this question was answered by the boroughs of Bexley, Bromley, Croydon, and Hillingdon. All authorities that responded to this question cited examples of 'promotional' policies, aimed at encouraging and attracting manufacturing uses. These policies were either specified in general terms, simply indicating that the council will 'encourage' or 'promote' manufacturing uses or floorspace, or in more specific terms, where for example the authority states a development control presumption in favour of industrial development. In both cases, more often than not, the policies were accompanied by either specific qualifications of the types outlined above, or by the identification of clear geographical locations to which new development would be channelled. Kensington and Chelsea and Kingston LPAs sought to encourage developments which involved a range of unit sizes, while Harrow specifically welcomed applications for the development of high-technology manufacturing premises. Other types of general 'promotional' policies mentioned sought to identify particular sites for industrial development; to channel the development of other uses away from existing industry; to assist in the improvement of existing industrial areas; and to encourage the expansion, rebuilding and improvement of existing firms.

To summarise, this section has shown that many London LPAs had developed policies over the 1980s which had the explicit intention of protecting manufacturing jobs. These planning authorities were attempting to respond to London's deindustrialisation in the broadly the same way as suggested in previous literature reviewed in chapter three. Detailed differences exist between the LPAs in the ways in which they have developed

policies to protect manufacturing jobs. Most importantly, it is clear from the discussion above that other land use and locational planning concerns impinge upon the extent to which the LPAs implement these policies. Manufacturing employment protection is not pursued in isolation and simply because a policy is included in a plan does not mean that it will be applied in every, or indeed any, specific development control case. Thus the survey results highlight the discretionary nature of planning and in this respect verify the need for the use of a survey methodology to determine the actual operations of policies. The discussion has also shown that many authorities in London have tried to protect manufacturing jobs, and while specific differences may be defined, the broad thrust of the policies is much the same. Having established that these policies were pursued, the next question must be whether the LPAs view these policies to have been successful or not, and why this is the case.

However, before this, another particularly important finding presented in this section relates to the widespread use of 'promotional' policies reported in the LPA responses. Contrary to what had been anticipated at the stage of survey design, employment protection policies do not necessarily dominate planning for manufacturing in London, and in fact more boroughs have actually pursued policies to encourage and manage new manufacturing developments than simply react to decline. Thus, it seems that even in the 1980s, when manufacturing jobs in London declined by 50%, LPAs were not only involved in the prevention of manufacturing loss, but were also channelling and encouraging new developments. The implication may be that London's manufacturing change is not quite so uni-directional as suggested by the employment experience shown in chapter four, and by the theoretical perspectives reviewed in chapter two.

5.4 The perceived importance and success of employment protection policies.

The results presented in this section explore issues relating to the actual implementation of employment protection policies, and to the degree of success in 'saving' jobs. Questions were asked with respect to the perceived importance of policy, to what extent authorities had attempted implementation through development control, and with what success. Most importantly, this section of the survey investigated the reasons why authorities believe the policies to have been successful or not. Given the employment

results presented in the previous chapter, it would be fair to hypothesise that employment protection has not worked. This section presents the LPA view on whether this is, or is not the case, and why it is so.

The LPAs were asked whether they viewed the use of planning controls to achieve the objective of protecting manufacturing jobs as being very important, important, or unimportant.

Table 5.5 The perceived importance of planning regulations for the protection of manufacturing employment.

	very important	important	not important
City of London			1
Camden	1		
Hackney	1		
Hammersmith	1		
Islington	1		
Kensington and Chelsea	1		
Lambeth	1		
Southwark	1		
Westminster	1		
Barking and Dagenham		1	
Harrow		1	
Havering		1	
Kingston		1	
Richmond	1		
Sutton			1
Total	**9**	**4**	**2**
Percentage	**60%**	**27%**	**13%**

The table shows that only two LPAs, the City of London and Sutton, regarded the use of employment protection policies as unimportant. Although these types of policies were specified in their plans, these two authorities did not attach any importance to them. In the case of the City, this is entirely consistent with responses reported in previous sections. Nine of the respondents, or 60%, viewed employment protection as very important, and 4, or over 26% as important. Interestingly with the exception of the city, all other inner boroughs included in the table above have indicated that the protection of manufacturing employment was a very important planning objective, while excluding Richmond, the outer London boroughs have generally expressed less enthusiasm for employment protection. Nonetheless, the table does show that the use of

land use planning controls for the protection of manufacturing jobs was taken seriously by 13 of the 15 responding LPAs.

The survey next attempted to determine how this perceived importance translated into the practice of development control. Authorities were asked to describe the extent to which the objective of employment protection was adhered to in development control decisions, under the categories very strongly, strongly, not strongly, or not adhered to at all. Kingston LPA were not able to provide any information on this question. Table 5.6 shows the responses to this question.

Table 5.6 : To what extent was the objective of employment protection adhered to in development control practice?

	very strongly	strongly	not strongly	not at all
City of London			1	
Camden		1		
Hackney		1		
Hammersmith		1		
Islington		1		
Kensington and Chelsea		1		
Lambeth		1		
Southwark		1		
Westminster			1	
Barking and Dagenham		1		
Harrow		1		
Havering		1		
Richmond	1			
Sutton				1
Total	**1**	**10**	**2**	**1**
Percentage	**7%**	**71%**	**14%**	**7%**

Of the 14 authorities shown in the table, one LPA, Richmond, followed employment protection policies very strongly in development control decisions, while 10, or 71.4% strongly adhered to these policies. Two LPAs have indicated that employment protection policies were not so important in development control decisions, and Sutton LPA claimed not to have followed these policies at all in practice. In fact, the results above are broadly consistent with the levels of importance that LPAs attached to employment protection policies. Authorities that considered employment protection to be very important have generally strongly adhered to these policies in development control practice. The only exception is Westminster planning authority, which despite

expressing concerns over manufacturing jobs loss, and despite developing policies which they regarded as important to respond to this problem, have not attempted a strong implementation of these policies in practice.

An interesting aspect of the responses is that so few LPAs have attempted to implement the policies in a very strong way. The survey did not pursue reasons for these answers, seeking simply to find out if the policies were actually enforced. However, it may be that the issue raised earlier about other planning concerns impinging on the pursuit of employment protection is important in this respect. In other words, while employment protection is important or very important to most authorities, the types of policy qualifications outlined above must enter into development decisions and thus while the protection of jobs may form an important objective, it is not the only planning consideration.

However, what can be established from the previous two questions is first, that the use of land use planning mechanisms to protect manufacturing jobs was considered very important or important by 13 LPAs, and that 11 of these attempted to strongly enforce these policies through development control.

Thus, for many authorities, employment protection has been taken seriously and implemented as an important planning response to manufacturing job loss. What difference have the LPAs actually been able to make ? Authorities were asked if they thought they had actually been successful in protecting manufacturing jobs. The results are shown below.

Table 5.7 : Has the authority been successful in protecting manufacturing employment?

	yes	no
City of London		1
Camden		1
Hackney		1
Hammersmith	1	
Haringey		1
Islington	1	
Kensington and Chelsea		1
Lambeth		1
Southwark		1
Westminster		1
Barking and Dagenham	1	
Harrow		1
Havering	1	
Kingston		1
Richmond	1	
Sutton		1
Total	**5**	**11**
Percentage	**31%**	**69%**

Table 5.7 presents extremely interesting results, which are consistent with the anticipations of chapter four. It can be seen that most borough LPAs do not think that they have been successful in attempting to protect manufacturing employment through land use regulation. Only five of the 16 LPAs, just over 31%, believe that they have been successful, and perhaps most surprising is that the boroughs of Camden, Hackney, Kensington and Chelsea, Lambeth, Southwark and Harrow all believe that they have not been successful in protecting manufacturing jobs, despite the fact that they viewed these policies as being important and adhered to them strongly in development control practice.

Most interesting are the written explanations that authorities gave for their answers. Of the five LPAs which stated that they had been successful in protecting manufacturing employment, only Hammersmith and Richmond were actually clear that land use regulation had played an important role. Hammersmith LPA stated that their restrictive policy stance had managed to resist pressure for residential development on industrial sites, while Richmond felt that the "development control machinery, backed by the local plan policies, had succeeded in protecting industry to a reasonable extent." However, the boroughs of Islington, Barking and Dagenham, and Havering were more

circumspect about the actual achievements of the planning system. Islington and Havering felt that while land use regulation may have played some role in employment protection, the loss of manufacturing jobs in this area was viewed as a trend of the 'market' and to some extent outside the realms of planning controls. To quote Islington LPA, "the policy was reasonably successful in the cases where it was applied, but obviously planning policies by themselves cannot reverse major structural change." Similarly, Havering argued that "the decline in manufacturing employment over the 1980s would appear to have been related to market forces rather than planning policy." Barking and Dagenham LPA also stressed the 'limits' of planning intervention. While they had applied 'restrictive' land use change policies for employment protection, the actual employment loss that took place was not really a 'regulation' or 'restraint' issue because "the main loss experienced in manufacturing employment was confined to the contraction of the Ford workforce. In other respects, any losses were countered by new jobs created." Thus, even amongst the LPAs who believe that planning policy has been successful, there is a feeling that the degree of success in protecting jobs through land use regulation is limited.

This theme was emphasised in the explanations given by those LPAs that felt they had not been successful in protecting manufacturing employment. Indeed, there was a general dismissal of planning regulations as an important factor. Many LPAs stressed the limitations of planning, pointing out in particular that employment tends to change in ways which are either not reflected in land use, or which planning cannot hope to influence. For example, Lambeth LPA pointed out that "development control cannot stop firms from contracting or closing down" and Southwark cited the relocation, rationalisation and closure of manufacturing establishments as important processes in employment change which were outwith the scope of land use planning control. The borough of Harrow made the point most strongly stating that "planning policies can only try to prevent land and buildings from being irrevocably lost to non-employment uses....they cannot change the most fundamental problems which cause firms to close down or move, or which lead in some way to employment loss." In fact, only two LPAs cited planning related factors in explaining why they had not been successful. Camden stated that manufacturing land had been lost to other uses because the LPA were sometimes unable to demonstrate demand, and Sutton argued that the protection of

manufacturing employment through land use regulation was seriously hindered by the fact that national Government guidance had lent no support to these types of policies.

Another important strand running through many of the explanations was that manufacturing decline is essentially not a local issue. Many LPAs viewed manufacturing jobs loss as a 'wider' structural economic change, which was determined above local levels, being a consequence of 'national structural change', or simply a trend that was occurring all over London. The indication from many of the responses was that it was difficult even to understand how planning was supposed to respond, never mind influence, these trends. For example, Southwark planning authority argued that they had lost many manufacturing jobs as a result of 'knock-on' effects due to industrial decline in other areas of London or even the nation as a whole. As such they felt that local controls over manufacturing job loss could realistically only be expected to have a marginal influence in protecting jobs. Likewise, Hackney pointed out that "development control is only one factor influencing the success and/or locational decisions of industry. It cannot be divorced from wider economic factors", and Haringey LPA stated that "employment decline has hit the borough across all sectors (not only manufacturing) and that is a reflection of the general performance of the economy, rather than local variables."

The results presented in this section are extremely important from the point of view of this thesis. Most London planning authorities feel that the role for land use planning in protecting manufacturing employment is limited. LPAs appear to believe this for two principal reasons. First, because the mechanisms of structural change which underpin employment loss are not thought to be determined at local levels, and as such broader occurrences in the regional or national economy are seen as being more critical to employment loss than any local factors which borough planning could conceivably influence. Second, because the planning system cannot regulate the closure, contraction, or relocation of manufacturing establishments, and as one LPA mentioned, cannot generally influence the profitability of manufacturing firms operating within the capital.

Research implications arise from these LPA responses. It would seem that land use change, which LPAs can attempt to regulate, may not be as critical in influencing

employment change as other factors. What these other factors may be is not yet apparent, however if this thesis is to understand why London's manufacturing employment has declined in such a severe and consistent manner, then it will be necessary to investigate as far as possible the ways in which industry in London is actually changing. This issue is returned to in section 5.7 of this chapter, when the factors which LPAs believe have underpinned employment decline in London are discussed. However, it should be stressed here that the planning authorities themselves have emphasised the importance of the 'market' and the processes of 'structural economic change'. The next section moves on to consider a specific case of the relationship between land use regulation and manufacturing employment change - the introduction of the business use class and related permitted development in London.

5.5 The implications of land use regulation for manufacturing employment change : the case of the introduction of the Business use class and related permitted development in London.

Using a 'case study' of the introduction of the business use class and related permitted development, the survey attempted to further explore the operations of land use regulation, and the relationship with manufacturing employment change in London. It was first considered important to obtain an indication of how the introduction of the new orders may have affected borough employment generally, and not just in terms of manufacturing jobs. In other words, does deregulation have any effects on jobs ? LPAs were asked to describe the labour market consequences of revisions as being either beneficial, detrimental, both beneficial and detrimental, or not important; and were also asked to explain their answers. Twenty-three LPAs answered this question, the borough of Haringey being unable to provide any information. The results are shown in table 5.8 below.

Table 5.8 : In what ways has the introduction of the business use and related permitted development affected employment opportunities within the borough ?

	beneficial	detrimental	both beneficial and detrimental	not important
City of London			1	
Camden		1		
Hackney			1	
Hammersmith		1		
Islington		1		
Kensington and Chelsea		1		
Lambeth		1		
Southwark			1	
Westminster		1		
Barking and Dagenham				1
Barnet				1
Bexley				1
Bromley	1			
Croydon				1
Greenwich		1		
Harrow				1
Havering			1	
Hillingdon				1
Kingston		1		
Redbridge	1			
Richmond			1	
Sutton			1	
Waltham Forest				1
Total	**2**	**8**	**6**	**7**
Percentage	**9%**	**35%**	**26%**	**30%**

A diversity of opinion was expressed about the impacts of the changes, seemingly related to differences in the general nature and extent of borough employment, and to differences in planning objectives. Bromley and Redbridge for example, regarded the employment effects of the business class to have been purely beneficial, because it had encouraged the development of 'flexible' office accommodation which had provided jobs suitable to the skills of the residents. As shown above, these two LPAs had not attempted to protect manufacturing jobs and generally felt that the introduction of the business class was in line with the broad land use planning employment objectives.

Eight authorities, or 35% of respondents, considered the introduction of the business class to have had a purely detrimental effect on employment within the borough. The main reasons cited related to a loss of manufacturing and manual jobs, and to a general

reduction in the range of employment generating uses, trends which were not consistent with LPA policy. In most cases this was thought to have created problems in relation to resident skills and this is true even in Central London. Westminster LPA stated that "there must have been a reduction in the range of jobs available for those without academic qualifications." In addition, some LPAs stated that new jobs generated under the deregulation measures were often taken up by workers from outside the borough. For the eight authorities, it seems that some industrial land was lost to office uses, particularly during the 'boom' at the end of the 1980s, but that much of this office space is now vacant and so has not generated an adequate amount of new jobs. However, a general point of consensus amongst these authorities was that these employment effects were more an 'acceleration' of existing trends than something entirely new. For example, Camden LPA cited the loss of small scale 'traditional' manufacturing uses in Fitzrovia and Hatton Garden as the main planning concern, although they did add that it was "debatable whether this loss is due to land use relaxation or due to changes in the nature of the market for industrial land."

The introduction of the business class was viewed as being both detrimental and beneficial by six of the 23 respondents. It would seem that while employment opportunities had been reduced in some economic sectors, important gains had been made in others. For example, Southwark LPA pointed out that while they may have lost some manual jobs from industrial land use change, they probably had gained more office employment and that this was particularly suitable to female residents. Similarly, Richmond planning authority felt that while "the introduction of the new B1 class provided a platform for losing some industrial premises, at the same time premises that could have remained vacant and redundant due to a lack of industrial uses were readily taken up by office uses which also provide employment, although for a different class of residents." Thus, while the changes may have had a detrimental impact on existing industrial sites, it had also allowed for the expansion of office uses, and in many cases generated an uptake of vacant sites, perhaps creating an overall increase of land in employment use.

Slightly over 30% of the LPAs did not regard the business class changes as being important. In these instances the responses indicated that this view was expressed largely because of the nature of land use within these boroughs. In most cases it was felt that development

pressure from office uses was generally not important, or at least not on existing industrial sites. For example Barnet stated that the introduction of the business class was unimportant because the "nature of the borough has little pressure from office development or from B1 uses, and there has not been a problem of office uses on industrial land." Other general reasons cited for the insignificance of the deregulation measures were that many industrial premises within boroughs were not suitable for B1 uses due to problems of conversion, and that while it may result in some industrial employment loss, in many cases it was an insignificant factor relative to the pressure on industrial land from other uses such as retailing and residential.

No consensus exists across London then, on the general employment effects of the introduction of the B1 class and related permitted development, however, the majority of boroughs appear to believe that is has made some difference. Authorities were next asked how the changes have affected the ability to protect manufacturing employment through land use planning regulation.

Table 5.9 : How has the introduction of the business class (UCO) and related permitted development (GDO) affected the LPA's ability to protect manufacturing employment through land use regulation ?

	seriously undermined	undermined	not affected
City of London	1		
Camden	1		
Hackney	1		
Hammersmith	1		
Islington	1		
Kensington and Chelsea	1		
Lambeth		1	
Southwark	1		
Westminster	1		
Barking and Dagenham		1	
Bromley			1
Harrow			1
Havering			1
Kingston	1		
Richmond	1		
Sutton			1
Waltham Forest			1
Total	**10**	**2**	**5**
Percentage	**59%**	**12%**	**29%**

The results of table 5.9 show that the majority of LPA respondents, 12 or 71%, believe that the introduction of the business class has undermined their ability to protect manufacturing employment. Only five LPAs suggested that the changes had no effect, and amongst these were Bromley, Sutton and Waltham Forest who had not attempted to implement employment protection policies, and Harrow and Havering who were more concerned with the loss of manufacturing land and premises to residential and retailing uses than any effects from the B1 class. It is interesting however, that such a high proportion of the respondents believe the changes to have undermined their ability to protect manufacturing jobs, particularly because many of these same boroughs had indicated that they had not been successful in implementing these policies. In fact, the City in particular did not even attempt to follow employment protection in development control decision relating to manufacturing. However, the responses need not be inconsistent or contradictory. What the LPAs appear be suggesting is that while their policies have not been successful, what success they could have achieved has been undermined by the introduction of the deregulation measures. In other words, any outcomes that they may have been able to influence, albeit marginally, have since the introduction of the B1 class been lessened. This raises an important point about land use planning regulation and manufacturing employment change. What the LPAs are not saying is that land use planning cannot respond to employment loss, but rather that in most cases these responses have marginal or negligible effects, given the scale of job loss over the period.

Authorities were asked if they could conceivably attribute certain types of land uses within their boroughs to the introduction of the new business class. Three simple land use changes allowed under the new changes were specified, from general industrial use to office use, from general industrial use to light industrial use, and from light industrial use to office use.[4] The purpose was to attempt to gain an insight into what the dominant land use change processes affecting manufacturing had been since the deregulation measures, and how these varied spatially across the capital.

[3] For the purposes of this question research and development uses were included within offices. This was for reasons of simplification and also because detail was sought elsewhere on the specific types of activities involved in each broad use change.

Table 5.10 : Can any of the following types of land use within your borough be attributed to the introduction of the B1 business use class and related permitted development ?

	general industry to offices	general industry to light industry	light industry to offices
City of London	yes	no	yes
Camden	no	no	yes
Hammersmith	yes	no	yes
Islington	yes	no	yes
Kensington	no	no	yes
Lambeth	yes	no	yes
Southwark	yes	no	yes
Westminster	no	no	yes
Barking	no	yes	yes
Barnet	no	no	no
Bromley	no	no	yes
Greenwich	yes	yes	no
Havering	no	no	no
Hillingdon	yes	no	no
Redbridge	no	no	no
Richmond	yes	no	yes
Sutton	no	no	no
Waltham Forest	no	no	no

The results indicate that of the three land use changes specified, the least common following the introduction of the business class has been change from general to light industrial use. In only two authorities, Barking and Dagenham and Greenwich, has this type of land use change taken place. It would seem that the change of general, and particularly light, industrial land and premises to office uses, have been the main land use implications of the deregulation measures. This is consistent with the arguments presented in chapter three which suggested that when planning regulations are removed the development potential of land may be realised for uses which command higher land and rental values. It is likely in this case that office uses would be of higher value than either light and general manufacturing, and so it is not surprising that these should be the predominant end use implication of the changes.

The broad land use change implications specified by the LPAs are not uniform throughout London. While all inner London respondents cited land use implications from the introduction of the business class, half of the outer London LPAs stated that none of the specified changes were important. Every inner London LPA believes that they are losing manufacturing land to office uses and that this can be

attributed to the introduction of the business class. Intuitively this would appear to make sense, since it would be expected that the development pressure for office uses is higher in the inner London boroughs, and thus the possibility for office development offered through the deregulation measures should be seized upon to a larger extent in inner than outer London. Five inner LPAs cited instances of change from general industrial use to office use, however the most consistent land use change specified in inner London has been the conversion of light industrial land and premises to office uses. The nine inner London respondents attributed this type of land use to the introduction of the business class, compared to only two of the outer London respondents. It is likely that this is at least in part a reflection of the different nature of inner and outer London manufacturing with perhaps a higher proportion of inner London manufacturing sites being classed as 'light manufacturing' than in outer London.

It is interesting that such a high proportion of the outer London LPA respondents, 50%, have indicated that they could not attribute any of the land use changes specified to the introduction of the business class. Again the dependant variable here is likely to be the level of development pressure affecting any borough. In essence, table 5.10 shows that while important land use change implications appear to have arisen, they are not uniform, and have not even been manifest comprehensively across the capital. For example, over 50% of the LPAs that responded to this question have stated that the change of use of general manufacturing land cannot be attributed to the introduction of the new orders. The implication of this may be that the development value effects which may arise from deregulation can only be realised feasibly in certain areas, and from certain premises and land. For example, as was mentioned previously, some outer London LPAs felt that the deregulatory changes were largely unimportant either because there was little development pressure for offices, or because the borough's industrial sites and premises because they could not be easily developed for office uses.

To examine this issue further, authorities were asked to describe the types of industrial land and premises that had been most prone to change, if there were any specific location within the borough where changes of use arising from the changes had been most prominent, and detail was sought on the particular types of uses involved in change. Unfortunately, many LPAs replied that they did not have detailed information

of this type, and the response to this question was generally poor, particularly from the outer London boroughs. The information that was received however, suggested that some LPAs could distinguish premises and land which have been most prone to use change, and that it was not simply any industrial land and building in any location that had been affected. In particular, many LPAs stressed that it was older and smaller industrial premises, rather than factory accommodation, that have tended to change to office uses. Furthermore, the inner London respondents have indicated that locations bordering, or within, the City and West End have probably experienced the most important effects from the introduction of B1. For example, Islington has lost older industrial premises to offices uses in the area of the borough which borders the City, and both Southwark and Lambeth emphasised that older industrial premises had been converted to office uses in the northern parts of the Boroughs. Within the City itself, it has mainly been smaller old buildings, as well as the newspaper printing works in Fleet Street and the surrounding environment, while Westminster has experienced the conversion of workshop premises to office uses predominantly within the West End. The two outer boroughs that answered this question, Barking and Dagenham and Hillingdon, both stated that most use change had occurred through the redevelopment rather than conversion of industrial sites and premises. This was because industrial premises were generally not seen as suitable for conversion to office use.

The final results to be discussed in this section relate to how much importance the LPAs would place on the regulative changes within the overall context of manufacturing employment decline. Manufacturing employment change figures were quoted for each authority over the 1987 to 1991 period, in all cases jobs had been lost. Each LPA was asked to consider how important they thought the changes had been within this overall decline. The results from all 24 respondents are shown in table 5.11 below.

Table 5.11 : Within the overall manufacturing employment decline experienced in the borough, how important have the implications of the new business class been ?

	extremely important	important	insignificant	not related
City of London			1	
Camden			1	
Hackney		1		
Hammersmith		1		
Haringey				1
Islington		1		
Kensington and Chelsea	1			
Lambeth	1			
Southwark		1		
Westminster		1		
Barking and Dagenham				1
Barnet			1	
Bexley			1	
Bromley			1	
Croydon				1
Greenwich		1		
Harrow			1	
Havering			1	
Hillingdon			1	
Kingston		1		
Redbridge			1	
Richmond			1	
Sutton				1
Waltham Forest			1	
Total	**2**	**7**	**11**	**4**
Percentage	**8%**	**29%**	**46%**	**17%**

Only two of the 24 respondents, Kensington and Chelsea and Lambeth, considered the introduction of the business class to have been extremely important for the overall decline of manufacturing employment in the borough, and a further 7 considered it to have been important. Eleven boroughs viewed the changes as being insignificant in relation to overall manufacturing employment decline and four as not related. A fairly clear difference is shown between inner and outer London responses in table 5.11, with 12 of the 14 outer London respondents, 85.7%, stating that effects of the deregulation measures are insignificant or unrelated, compared to only 3 of the ten inner London LPAs.

The results in table 5.11 require careful consideration. They do indicate that the majority of respondents, 62.5%, view the introduction of the B1 changes as being either insignificant or not related to overall manufacturing job loss, and this is broadly

consistent with the results of earlier sections of the survey. However, given the responses presented in table 5.7 we may have expected this percentage to have been higher. For example, both Kensington and Chelsea and Lambeth consider the introduction of the changes to have been extremely important in the context of overall manufacturing employment decline, yet both these authorities also stated that land use regulation had not been successful in protecting manufacturing jobs. This is also true of Hackney, Southwark, Westminster, Greenwich and Kingston, where the LPA has stated that the business class changes are of importance. If land use regulation is unimportant, then why does this deregulation have such an effect for some boroughs ?

There are at two issues that need to be considered in this respect. First, is that while boroughs may feel that land use regulation is not a critical influence, previous studies of the Business class, reviewed in chapter three, have suggested that deregulation of this type often induces development which would not otherwise have taken place. In other words, the actual deregulation stimulates the property market to undertake development by changing the relative positions of 'actors' in the development process. If so, the effects of the changes are not so much an issue of local planning controls, but are related to changes in the nature of the property market, where the introduction of the new class has perhaps induced the development of new types of property in areas where it is viable. This is perhaps particularly so in inner London boroughs were the effects of the changes were most apparent. This would explain why LPAs feel that they may not have been successful in protecting manufacturing employment, but that the deregulation measures have had adverse effects. The second important issue is that the categories defined in table 5.11 clearly have no actual quantitative meaning and reflect nothing more than the general perceptions of the LPAs. It would be impossible to assign any type of figure of to what 'important' actually means. As stated previously in this section, many LPAs felt that the changes had 'accelerated' existing trends, and thus while a few authorities may cite the UCO and GDO changes are important, that is not to say that they actually constitute a new and dominant force within employment change.

The utilisation of the business class case study in the survey has raised a number of issues. It has shown that this deregulation of planning controls has undermined the

ability of many London LPAs to protect manufacturing jobs, and in some cases is thought to have had had an important effect on manufacturing jobs loss. However, the land use changes deregulated do not appear to have had a consistent impact across all boroughs in London. In fact, even within the boroughs where it may be important, it is perhaps only relevant to a certain proportion of industrial land and premises located in particular areas. Furthermore, the extent to which the deregulation actually matters for land in any location in any borough is dependent to a large extent on the development pressure that exists for higher value uses. The point is, that while some LPAs feel it has had significant effects, these are not uniformly felt across London, within boroughs, or indeed across the range of industrial property. The study of the business class has shown that land use regulation cannot be dismissed and it is likely to significant to some extent. However, given the objectives of this chapter, the most critical finding in this section is that the effects of the changes are limited, and that the majority of boroughs still feel that even such a significant deregulation is not a significant factor in manufacturing employment change.

5.6 Discussion.

This chapter has shown that most borough planning authorities in London are concerned about manufacturing employment decline. Many have attempted to intervene to protect manufacturing jobs, and have taken this objective seriously, largely out of concern about the increasing inequity of the labour market. However, the pursuit of these policies is generally considered by London's LPAs to have been unsuccessful because the factors underpinning manufacturing employment change are regarded as being outwith the scope of planning control. While the study of the deregulation measures introduced under the business class and related GSO modifications indicated that land use planning regulation may be important to a limited extent, it does not appear to be critical.

In this respect the survey verifies the anticipations of chapter three : that the influence of planning controls is likely to be small. However, the use of planning controls should not be dismissed as irrelevant. Clearly, they are not regarded as critical given the severe scale of employment decline, but in many cases they may actually have protected

manufacturing jobs. The case study of the business class highlighted that deregulation was an important factor in some boroughs, and particularly in the inner boroughs where development pressure is likely to be most intense.

The fundamental research question raised by results of the survey is what is the nature of the relationship between employment change and the facets of economic change which planning authorities can control ? The final results to be presented in this chapter shed some light in this issue. Authorities were asked to consider the importance of four factors in causing manufacturing employment loss in the borough, and were asked to rank each factor independently on a scale of one to four. An additional category specified as 'other' was included in this question. The results are presented in table 5.12.

Table 5.12 : How important are the following factors in creating manufacturing employment loss in your borough ?

	closure of manufacturing establishments	relocation of manufacturing establishments	displacement of manufacturing by service uses	shedding of jobs within existing establishments
City of London	2	4	3	1
Hammersmith	1	1	3	3
Haringey	2	1	2	3
Kensington and Chelsea	1	3	3	1
Lambeth	2	1	3	3
Southwark	3	1	2	4
Westminster	3	4	4	4
Inner London Rank	**14**	**15**	**20**	**18**
Barking and Dagenham	2	0	0	3
Barnet	4	0	1	3
Bromley	3	2	1	4
Croydon	1	2	2	3
Greenwich	4	3	2	3
Harrow	1	2	3	4
Hillingdon	2	1	0	3
Kingston	1	3	0	2
Redbridge	3	0	2	1
Richmond	3	0	4	2
Sutton	4	3	4	2
Waltham Forest	1	2	0	3
Outer London Rank	**29**	**18**	**19**	**33**
Total Rank	**43**	**33**	**39**	**51**

The results to this question verify earlier findings of the survey which showed that factors underpinning manufacturing employment decline were often regarded as being outside the realms of planning control. However, the responses are still surprising. The 'contraction' of manufacturing plants, or the loss of jobs from existing establishments has the highest overall rank of any factor, being clearly the most important in outer London and second in inner London. This implies that in many instances employment is likely to be in decline without corresponding floorspace loss, and thus completely outwith planning control. The second most crucial factor overall is the closure of manufacturing establishments, and again this cannot be influenced by the planning system. It is interesting that this factor ranks higher than 'relocation' for the experience over the 1980s, as this is consistent with results for earlier periods in London discussed in chapter two. In the City, Westminster and Kensington and Chelsea however, the relocation of establishments has been extremely important. The ranks for the 'displacement' category are unsurprising given responses elsewhere in the survey. This has been an extremely important factor in inner London where development pressure for these uses in most intense, and much less important in outer London. 'Other' factors cited included land and rental value increases, as well as the replacement of manufacturing uses by residential, warehousing and retailing uses.

Table 5.12 shows that authorities believe that some of the main processes underlying London's manufacturing employment change are outwith the scope of planning control. The table provides no definitive evidence of the actual extent to which these processes are occurring, being simply the perceptions of borough LPAs, with no empirical basis. However, it does at least give some preliminary ideas for why the LPAs believe that employment protection policies have been so unimportant.

5.7 Conclusions.

The conclusion from this chapter must be that little evidence has been found to suggest that the use of planning controls have had any systematic influence on manufacturing employment change. The implications are that more complex factors are at play in London's manufacturing employment change than a simple one way relationship which is expressed in land use change. This raises interesting issues about the two theoretical

perspectives which stressed the importance of 'space constraints' and 'crowding out' processes in urban manufacturing change. While the survey has not directly addressed these theoretical accounts, the indication for the results is that these processes may not be as critical in urban manufacturing employment change as expressed in the literature. The survey has determined that many London LPAs have protected manufacturing land and have attempted to resist change of use to other activities, yet have been unsuccessful in protecting manufacturing jobs. If the two processes of space constraint and crowding out were happening in London then it is logical to suppose that land use planning could make a big difference, and this requires further attention.

The survey results have also indicated that the experience of manufacturing change in London may not be the straightforward process of decline described in chapter four, and assumed in the theoretical perspectives reviewed in chapter two. Over the 1980s, borough planning authorities have developed policies to guide or channel the location of new manufacturing developments, and this indicates that manufacturing land and premises may still be being demanded in the capital. If so, then the validity of perspectives on urban deindustrialisation may be questioned in the extent to which they have underplayed the dynamism of manufacturing change in cities and placed an over-emphasis within explanations only on processes of decline.

Another important aspect of the results for the development of the research is that a focus on planning and land use issues is unlikely to uncover what is really happening to London's manufacturing. Planning policy appears from the results of the survey to be of secondary concern, and to play down the importance of economic processes appears to be an erroneous way of approaching London's manufacturing employment decline. Indeed, the LPAs have indicated that while planning control in London operates at the 'local' level of boroughs, the processes behind the decline of manufacturing jobs are not likely to be local in nature. However, the focus on employment protection policies through land use regulation raises research questions which may be pursued in a quantitative fashion. What are the dominant processes that underpin London's employment change? Is land use changing in different ways to employment, and could this offer and explanation for the lack of success in employment protection?

Thus, one of the most important conclusions from the survey is that the specific orientation of the research must change, from focusing on the potential effects of policy alone to attempting to uncover the empirical context within which policies work. To determine why London has lost jobs in such a consistent and severe manner the research must consider as far as possible changes in the nature of London's manufacturing itself, and explore a wide variety of different facets of manufacturing change, and not just in relation to job loss. In this way it is hoped that the reasons why planning policy may not have had such a critical influence on manufacturing employment change may be uncovered. Hence, the thesis now turns to consider trends in different indicators of industrial change in London over the 1980s with a view to understanding the dominant processes underpinning manufacturing job loss, and thus the context within which planning policy operates.

Chapter 6 : Aspects of change in London's manufacturing industry : an investigation into circumstances surrounding decreasing labour demand.

6.0 Introduction.

The previous chapter has raised a number of important issues concerning manufacturing employment change and planning in London, principally suggesting that many borough LPAs believe that the processes which underpin job loss are to a large extent outwith the scope of planning control. This chapter moves away from a narrow focus on employment alone to consider aspects of manufacturing change in London related to land use and floorspace, firm entry, and output change. As mentioned previously in this thesis, a quantitative analysis of employment protection policy effects using aggregate data sources would be extremely difficult to do as well as being a potentially misguided exercise. This is not attempted here. Rather, a variety of evidence is presented which examines different dimensions of change in London's manufacturing industries, allowing conclusions to be reached about the nature of employment change, and thus reasoned hypotheses to be advanced about why LPAs believe that land use planning can have only a marginal influence on job loss. In this respect, the emphasis of analysis changes somewhat. The boroughs believe that they cannot exert a significant influence on manufacturing employment decline. It therefore seems logical to examine the circumstances surrounding employment change and what this may mean for planning policy, as opposed to asking what policy means for employment change.

The analysis is also presented with a view to testing the crowding out and space constraint hypotheses. These two theoretical accounts provided good reasons for believing that land use planning regulation may be important in manufacturing change. Guiding the inquiry with respect to these two perspectives provides a frame of reference within which to interpret the results, and it also presents a useful means of exploring land use planning consequences.

The chapter begins by outlining a spatial framework for analysis. Section 6.2 then sets out explicitly to explore the crowding out hypothesis of manufacturing change in London. The chapter moves on to consider floorspace and land use aspects of

manufacturing change in the capital, commenting on the space constraint and crowding out hypotheses where appropriate. Surprising trends in firm entry, output and labour productivity change are then presented. Finally, conclusions are drawn and further research implications are discussed.

6.1 Geographical scales of analysis.

A number of different data sets are used in this chapter which are not available at identical levels of spatial and industrial disaggregation (see appendix one). As with any empirical research, the analysis is necessarily limited and fashioned by the scope of the available data. It is worth stressing here that one consequence of the empirical nature of this chapter is that the presentation of results at the borough level becomes impractical. Due to the wide scope of issues to be examined, space does not permit such a detailed discussion of geographical differences within London. Guided largely by the need for comparison amongst results from the different data sets, a spatial framework has been adopted which, for the purposes of presentation, divides Greater London into three broad areas : Central London which comprises the Cities of London and Westminster; Inner London which is made up of the remaining 12 inner boroughs; and Outer London contains 19 boroughs (see Figure 1.1).

Moving away from the borough level analysis was found essential for the presentation of the following results, however it does raise difficulties in itself, and two limitations of the adopted framework should be made clear. First, and most obviously, the definition of Central London is at best inaccurate. A more appropriate definition of this area would be that used by Frost and Spence (1991a) which captures the area bounded by the main railway termini. However, Frost and Spence were considering trends in employment, where the data may be extracted at very fine levels of geographical detail, and many of the data sets used in the following analysis are only available at the borough level. Central London cannot be defined by boroughs and this is well understood here, however it has been considered important to treat the City and Westminster separately from the rest of Inner London due to their unique economic significance within the capital. The second major limitation lies in the use of the standard inner and outer London distinction. It is recognised here that it is only an

artificial boundary that defines these two areas. However, the previous survey chapter has indicated that important distinctions may exist in this respect and spatial detail can be flagged in the text to supplement the framework when required.

Given these limitations, it was finally decided that the empirical work should actually be conducted at the borough level where possible, but could be presented in terms of Central, Inner and Outer London, accompanied by discussions of important borough differences and by the presentation of borough and even ward results achieved through statistical methods to reduce the data. The spatial framework should therefore be understood within the limitations of the data, and only as a tool for presentation. It is not presented as a definitive geographical concept of the London conurbation, but is used simply to highlight the broad, yet important, differences in economic structure and change within the capital, whilst allowing for the different data sets to be compared geographically. Most importantly the spatial framework is not rigidly applied. Borough and even ward level detail is specified in the text where possible if the defined framework appears to be masking important observations. The spatial focus of the thesis does change in this chapter. However, given that the London LPAs generally believe that manufacturing job loss is not directed by local phenomenon, the issues that the research seeks to investigate also must change if the thesis is to advance the understanding of what is happening to London's manufacturing industry. In this respect it could be argued that it is no longer simply a borough issue that is being examined, because appropriate data and methods must be used regardless of whether they permit a borough focus.

6.2 The 'global city' crowding out effect : manufacturing, producer service, and non-producer service employment change in London, 1981 to 1991.

The chapter turns first to consider a specific sub-set of the 'crowding out' hypothesis : that manufacturing activity in London is being 'squeezed out' of the capital due to the spatial expansion of the tertiary sector.[1] This hypothesis deserves explicit attention. It is

[1] As discussed in chapter two, a further aspect of the crowding out hypothesis relates to the issue of sectoral selectivity. Sassen (1991) argues that not all manufacturing sectors will be affected by crowding out, but that some industries will retain a comparative advantage by remaining in London. This issue is not investigated here, because it has been adequately shown in chapter four that severe manufacturing

one of the most up-to-date comments on manufacturing change in the capital, and is directly relevant to the issues of structural economic change, and the role of land use planning, that the thesis seeks to investigate. Are spatial trends in London's economic growth and decline causally related ? This question is extremely difficult to answer categorically. In this section, the issue is approached through an analysis of employment data. These data are used here to determine the degree of spatial and temporal association of sectoral growth and decline within London. In other words, has manufacturing employment been declining where, and when, services or producer services have been growing.

Table 6.1 outlines general employment trends in London for two periods between 1981 and 1991, and for three categories of industry : manufacturing, producer services, and non-producer services.[2] The purpose of the table is to provide a description of employment change in London, and within this context, to highlight any spatial and temporal coincidences in the trends of service and producer service employment growth and manufacturing employment decline in London over the 1980s. Considering first London as a whole, it can be seen that producer service employment has expanded quite substantially by 28.3%, or by 143,000 jobs over the 1981 to 1991 period. From 1981 to 1987, the per annum rate of growth in London's producer services was approximately 5.8%, however the effects of recession are apparent in the later period when employment actually began to decline by around -1.2% per annum. Non-producer service employment in London increased marginally by 0.4%, or by only 9420 jobs in the first period of the 1980s defined in the table, and subsequently declined by -3.3% in the later period. As a result there was a net loss of some 62,300 non-producer service jobs in the capital over the ten year period as a whole.

Some spatial variations in the general trends of employment change can be identified. In terms of manufacturing jobs, Central London experienced the most acute relative decline of over 65% between 1981 and 1991. In Inner London just over 40% of manufacturing jobs were lost, and in Outer London 47%. The Central area, then, stands

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employment decline has affected all sectors of industry within the capital. It is however, discussed in a published version of this chapter (Graham, Spence, forthcoming a).

[2] London's employment trends have been described in chapter four, though not with respect to the categories of producer and non producer services (see appendix one), nor with respect to the areas of Central, Inner and Outer London.

Table 6.1 : Employment change in manufacturing, producer services and non-producer services in Central, Inner, Outer and London, 1981 to 1991.

	Manufacturing		Producer services		Non-producer Services	
	abs.	%	abs.	%	abs.	%
Central						
1981-1987	-32938	-41.99	68783	25.60	-23871	-5.23
1987-1991	-18241	-40.09	-58861	-17.44	-61986	-14.34
1981-1991	-51179	-65.25	9922	3.69	-85857	-18.82
Inner						
1981-1987	-58387	-28.59	51321	41.98	12240	1.56
1987-1991	-26686	-18.30	20786	11.98	-36433	-4.57
1981-1987	-85073	-41.66	72107	58.99	-24193	-3.08
Outer						
1981-1987	-111141	-27.69	55757	48.14	21051	2.32
1987-1991	-77710	-26.78	5417	3.16	26673	2.87
1981-1991	-188851	-47.06	61174	52.82	47724	5.26
London						
1981-1987	-202466	-29.60	175861	34.70	9420	0.44
1987-1991	-122637	-25.47	-32658	-4.78	-71746	-3.32
1981-1991	-325103	-47.53	143203	28.26	-62326	-2.90

Notes :
(1) Producer services are as defined by Sassen (1991). Non-producer service employment is total service employment less producer service employment (see appendix one).

Source : Census of Employment (NOMIS)

out in terms of relative loss, shedding almost 20% more jobs than any other area. However, in absolute terms the Outer area lost the highest number of jobs, almost 190,000, over the ten year period, while Inner and Central London lost 85,100 and 51,200 jobs respectively. In all areas, decline occurred in both periods defined in the table although losses accelerated in the later period. In fact, in the case of Central and Outer London rates of per annum loss between 1987 and 1991 were almost double that of the 1981 to 1987 period. In Inner London rates of job loss increased only slightly in the later period, and more detailed analysis of the census data indicates that this can be explained by the movement of paper and printing industries from Central to Inner London between 1987 and 1989. Despite this, manufacturing employment decline has generally been substantial and consistent over both time and space.

Producer service employment increased considerably in all areas in the 1981 to 1987 period. In absolute terms Central London experienced the largest growth in employment of almost 69,000 jobs, while employment in Inner and Outer London grew by 51,321 and 55,757 jobs respectively. This growth of producer service employment in Inner and Outer London represented vast relative increases of 42%, or 6% per annum, and 48%, or 6.9% per annum, respectively. In the 1987 to 1991 period, however, producer service growth rates slowed to 3% per annum in Inner London and 0.79% in Outer London creating 20,786 and 5,417 jobs in each area over this four year period. In Central London, severe declines in producer service employment were experienced in this later period. Approximately 59,000 producer service jobs were lost in Central London, some 17.4% of the 1987 total. Thus, over the ten year period as a whole the net growth of producer service employment in Central London appears modest, with an increase of only of only 3.7%, or 10,000 jobs. Employment trends in this latter period are heavily influenced by the impacts of recession and it is interesting to note that as regards producer service employment, the recession clearly led to reduced growth rates of employment in Inner and particularly Outer London, but that it was really Central London that bore the brunt of the downturn.

In the non-producer service industries, employment trends have differed in each area of London defined. In the Central area employment declined by -5.2%, or by almost 24,000 jobs in the 1981 to 1987 period. This was followed by a further extremely large

contraction of -14.4%, or 62,000 in the 1987 to 1991 period. In Inner London non-producer service employment expanded by 1.6%, or by 12,000 jobs over the 1981 to 1987 period, however this was more than offset by a decline of -4.6% in the latter period, resulting in a net loss of 24,000 jobs over the ten year period as a whole. In contrast, non-producer service employment in Outer London expanded in both periods defined. Between 1981 and 1987 the per annum rate of growth of these industries in Outer London was 0.3%, creating almost 21,000 jobs over this seven year period, and this rate of growth actually increased to 0.71% per annum in the 1987 to 1991 period producing an additional 32,100 service jobs in Outer London.

Clearly, table 6.1 demonstrates two broad employment trends which are consistent over the areas defined. First, severe absolute and relative manufacturing employment decline occurred in both periods defined in the table. Second, the rapid expansion of employment in specialist producer services took place although this trend was only fully evident across space in the 1987 to 1991 period. Trends in non-producer services have not been consistent across time or space. However, the important issue in table 6.1 is to what extent the coincidence of these two broad trends could be indicative of a causal relationship as suggested in the global city hypothesis. If employment data is a useful surrogate for actual changes in economic activity, then the indication from table 6.1 would be that a negative causal relationship is difficult to establish over both periods within the decade. In all three areas manufacturing employment decline was at its most severe in the 1987 to 1989 period when producer service employment growth slowed down, or in one case actually substantially declined. However, over the 1981 to 1987 period it would seem that producer service employment growth has been broadly coincidental with manufacturing employment decline in the three areas of London defined, while non-producer service change has not.

Assuming for the moment that employment trends over this period are, to a realistic extent, indicative of actual economic changes, then simply for the purposes of investigating the crowding out hypothesis further the possibility of causal relationships may be considered. The level of spatial analysis included in table 6.1 is insufficient to indicate potential causality as the processes of growth and decline could be highly concentrated within the three broad areas defined, and thus potentially spatially

independent. However, if a very detailed spatial coincidence between producer service growth and manufacturing decline could be determined for each broad area of London, then the possibility of a causal relationship could be considered, although not established, in a more sophisticated fashion.

Employment data were extracted at the most detailed geographical level available, which divides the capital into some 779 wards - 48 in Central London, 274 in Inner London, and 457 in Outer London. These data were available from 1984, and the period from 1984 to 1987 was considered. During this period employment in producer services grew substantially in all areas while manufacturing employment declined. Since the extreme spatial detail of the data renders their presentation inappropriate here, simple correlations were conducted to examine spatial coincidence in Central, Inner and Outer London. Manufacturing employment change was correlated separately with producer service employment change for each broad area. Given the small numbers of jobs that often exist at this detailed spatial level, absolute rather than relative change was found to be the more appropriate measure. In general terms, problems will of course arise in using employment data to indicate economic activity and this issue is returned to throughout the chapter. However, correlations of this type do allow for the data reduction required, but should only be regarded as a starting point in exploring the spatial coincidence of sectoral growth and decline.

Given that the data being used in the correlations is of interval-ratio measurement the Pearson's product moment procedure is preferred to the non-parametric rank correlation. Rank correlation necessarily reduces detail within the data, and in assuming equal cascading values of rank tends to understate the importance of extreme values. For Central London the correlation of manufacturing employment change with producer service produced a Pearson's coefficient of -0.27, for Inner London -0.32, and for Outer London 0.1. None of the correlations were statistically significant at an acceptable level. These results, although tentative and exploratory rather than conclusive, suggest two important points for the crowding out hypothesis. First, that the degree of spatial association of producer service employment growth and manufacturing employment decline identified in Central and Inner London does not provide a strong indication of the possibility of a causal relationship. In other words, it may have been important in some areas but does not seem to be a consistent spatial trend. Second, that in Outer London, which contained approximately 60% of London's manufacturing employment in 1984 and 1987, and in which manufacturing employment decline and producer service growth have been clearly apparent over the 1980s, the detailed spatial

coincidence of these trends has not been strong enough to allow a negative causal relationship to be established. However, the results do have to be considered in light of the possibility of 'lag' effects in the relationships arising because of the existence of an intervening period in development activity between the closure or relocation of manufacturing and the development of new service uses. The existence of such lag effects would render crowding out processes very difficult to detect through the procedures used above because some appreciable period of time would exist between the decline of manufacturing employment and the growth of service sector employment. However, the use of the three year period within the correlations conducted above is particularly important in this respect and it is hoped that this relatively broad time period will have assisted to a large extent in accounting for the importance of lag effects.

The limited extent to which employment can be used as an actual index of economic change is made clear when other indicators of economic change are introduced in subsequent sections of this chapter. Nonetheless, as a starting point for examining the crowding out hypothesis, the employment analysis allows for at least speculation that if the 'crowding out' hypothesis has been such an important facet of urban economic change, then stronger relationships should have been detected at such fine levels of spatial detail.

However, while it has been demonstrated that there may not be a strong relationship between producer service employment growth and manufacturing employment decline at a detailed spatial level, on the basis of this information alone it cannot be concluded that in London's recent economic change manufacturing decline is not causally associated with service sector growth in aggregate terms. Particularly regarding employment change, it may be that an economic maturity effect, as discussed in chapter two, has been occurring in London over the 1980s which would have no discernible intra-urban effects. Specifically, increased competition between economic sectors in shared labour markets could have induced price implications which are important in explaining manufacturing employment decline. For example, relative to Great Britain, data from the New Earnings Survey (NES) (DE, 1984 - 1991) shows that manual manufacturing wages in London are significantly higher. In 1984, weekly wages for male manual manufacturing workers in London were 10% higher than in Britain, and 5.9% higher for female manual workers. By 1991 this wage gap between London and Britain had increased, with male manual wages in London being 16% and female manual wages 11% higher in London than in the nation. Wages in non manual banking, insurance, finance and business services, the nearest category to producer services defined in the NES, were 16.2% higher in London than Britain for males and 19.3% higher for females in 1984, and by 1991 these figures had increased to 28.4% and 32% respectively.

Whether the manual wage growth is causally related to the banking and finance wage growth as a result of labour competition is not clear. However, the data do show that the ratio of manufacturing manual wages to banking, insurance, finance and business service non manual wages in London was 0.7 for males and 0.7 for females in 1984, and in Britain 0.7 and 0.8 respectively. By 1991 the London ratios were 0.5 and 0.6 and in Britain 0.6 and 0.7. Thus the London manufacturing manual wages have grown at a slower rate relative to banking, insurance, finance, and business services, than in Britain. The NES data do not permit a full examination of any causal trends, however in general the higher costs of labour in London may be important to some extent in London's manufacturing decline. Alternatively, high manufacturing wages may also be indicative of higher labour productivity which is discussed later in this chapter.

However, employment change in general need not be indicative of actual industrial change, and the use of employment data alone may be viewed as deficient and inadequate to comment on the 'crowding out' hypothesis of urban manufacturing change.

6.3 Floorspace and land use aspects of manufacturing change in London.

The following section considers floorspace and land use aspects of manufacturing change in London. These issues are of critical importance in understanding the relationship between planning and economic change and are also useful in commenting upon the crowding out and space constraint hypotheses. Unfortunately, sources of land data at the urban level are scarce and in the data that do exist industrial disaggregation tends to be poor. Floorspace and land use related data have been derived from two basic sources which are described in full in appendix one. The first is the Commercial and Industrial Floorspace Statistics (CIFS) which are available from 1981 to 1985, and the second is the London Development Monitoring System (LDMS) which is available from 1987. Both sets of data are geographically disaggregated at the borough level but are not compatible in the information they provide or in the way the data is collated. For this reason they are analysed separately.

In London as a whole in 1981, the share of the total industrial and commercial floorspace surveyed by the CIFS in manufacturing use was just under 32%, a larger share than the other uses of warehousing (26%), shops and restaurants (19%), or even commercial uses (24%). Spatially, the proportion of total floorspace in manufacturing and commercial uses differed substantially. In Central London under 2% of floorspace was in manufacturing while 72% was in commercial uses, in Inner London 29% of floorspace was in manufacturing use and 19% in commercial use, and in Outer London, manufacturing was by the far the dominant employment use in floorspace terms occupying over 45% of total floorspace, while commercial uses occupied only 11% of total industrial and commercial floorspace.

Table 6.2 shows the changes in the floorspace occupied by manufacturing and commercial office uses in Central, Inner and Outer London, as recorded by CIFS between 1981 and 1985. In 1981 London as a whole contained approximately 22.5 million metres^2 of manufacturing floorspace, some 9.6% of the total in England. Outer London contains 66% of the total, 14.8 million metres^2. The share in Inner London was approximately 33%, 7.5 million metres^2, and in Central London just under 1%, 0.1 million metres^2. By 1985, little change is evident in the shares of manufacturing floorspace held by these areas with only a slight decline in Outer London and slight increase in Central London. In fact, all areas in London lost manufacturing floorspace during this period. Outer London lost the largest share, almost 10%, followed by Inner London with just under 8%, while Central London experienced only a marginal loss of 2.1%.

The distribution of commercial floorspace in London in 1981 was very different from that of manufacturing floorspace. The two boroughs that comprise Central London contained just under 50% of all commercial office floorspace, Inner London contained 28.6%, and Outer London 23%. As with manufacturing floorspace, by 1985 the shares of commercial floorspace held by each area were broadly the same. However, commercial floorspace actually expanded in all areas over the 1981 to 1985 period. Interestingly, Outer London experienced the largest relative and absolute growth in commercial floorspace of 17%%, or 0.7 million metres^2. In inner London, commercial

Table 6.2 : Commercial and industrial floorspace changes in Central, Inner, Outer and London, 1981 - 1985.

		Central	Inner	Outer	London
Manufacturing 1981	abs)	197.5	7459.7	14838.2	22495.4
	(%)	0.88	33.16	65.96	
Manufacturing 1985	abs)	193.4	6871.8	13387.1	20452.3
	(%)	0.95	33.60	65.46	
Change 1981 - 1985	abs)	-4.1	-587.9	-1451.1	-2043.1
	(%)	-2.08	-7.88	-9.78	-9.08
Commercial offices 1981	abs)	8084.8	4781.3	3846.6	16712.7
	(%)	48.38	28.61	23.02	
Commercial offices 1985	abs)	8294.7	5438.9	4518.7	18252.3
	(%)	45.44	29.80	24.76	
Change 1981 - 1985	abs)	209.9	657.6	672.1	1539.6
	(%)	2.60	13.75	17.47	9.21

Notes :
(1) Absolute figures are in thousand square metres

floorspace increased by 14% or by 0.7 million metres^2, while in Central London a marginal growth in floorspace of 2.6%, or 0.2 million metres^2 was experienced.

Thus it would seem, that over this four year period manufacturing floorspace was declining in each area of London, while commercial office use floorspace has been expanded. The first issue to be addressed is whether these trends may be causal, and as with employment data, this cannot be considered at such a broad spatial level. Using the borough as the basic unit of geographical analysis, simple correlations were again conducted for the purposes of data reduction, and as a means of indicating the degree of spatial association of commercial office floorspace growth and manufacturing floorspace decline. The correlation of the two variables, in relative terms, for each borough over the 1981 to 1985 period produced a coefficient of -0.1. Thus, while the form of the relationship was found to be negative, as suggested in the crowding out hypothesis, the association was extremely weak and not statistically significant. Furthermore, it would appear from a scatterplot of the two variables that the determination of the association was not affected by any important outliers in the data.

However, over the 1981 to 1985 period, floorspace in other uses was expanding in London. Warehousing floorspace grew by 10% and shops and restaurants floorspace by 3.2%. Could the expansion of these uses be important in explaining the decline in manufacturing floorspace? The 'global city' account of the crowding out effect focuses on the growth of producer services, although the expansion of land use in restaurants, and what are less clearly described as 'ancillary' business uses, are also thought to be important. Warehousing expansion was not cited as an important causal influence. Correlating shops and restaurant floorspace change on manufacturing floorspace change produced a statistically insignificant coefficient of -0.04, and again outliers were not an important influence on the relationship. However, correlating warehousing floorspace change on manufacturing floorspace change produced a coefficient of -0.36, suggesting a moderately strong negative association between these sectors in growth and decline, and the correlation was statistically significant at the 0.01 level.

The industrial categories of the CIFS are not nearly as specific as those permitted with employment data, and clearly the correlations presented above provide little more than

an indication of how spatially associated sectoral growth and decline is in London. However, they may indicate two important points about London's manufacturing change. First, a distinct relationship between manufacturing floorspace decline and the growth of commercial office floorspace, as suggested in the global city literature, is absent. While the time series of the data used is relatively short, given the importance attached to the crowding out effect, at least a moderately strong spatial relationship would have been expected. Second, it would seem that rather than office orientated activities competing for industrial land, warehousing uses have may been more important. These uses are not those associated with London's global city role, but are lower value activities which, perhaps in many instances, have the same locational requirement as manufacturing industry. What these relationships of borough data reveal would seem to support results presented in chapter five, and that is that by and large commercial offices will not compete for the same land as manufacturing, because they have different locational requirements, both within London and even within individual boroughs.

Another aspect of change in London manufacturing worthy of consideration is where the pressures for manufacturing floorspace or land use change may originate from in terms of types of use. The LDMS data are not particularly well founded, simply comprising the numbers of planning applications submitted for changes from and to manufacturing land use, but they are helpful in this respect. The uses in the LDMS are categorised according to the 1987 UCO. The definition of manufacturing used here is the same as that used by Cowan and Gordon (1993), and comprises use classes B2 (general industrial) and B3 (special industrial). (see appendix one)

Three points of caution should be raised. First, it is recognised that developments dealt with by the land use planning system will not be the same as the sum of all development activity in London. With manufacturing especially, attention has been focused on the consent free development which arisen following the introduction of B1 business use class and related permitted development. (see appendix three) For this reason the following analysis offers little more than a broad guide to manufacturing-related development trends in London. Second, for manufacturing, a definitional problem exists with the UCO, as class B1 can now represent certain types of office

uses, research and development uses, as well as light manufacturing. However, the LRC have attempted to make a distinction within the B1 class by allocating all manufacturing related uses to the B2 class which consists of general industry. This leaves the business use class as essentially comprising a range of activities which are typically office-based and do not provide services direct to visiting members of the public. Examples would included specialist consultancies to business, advertising companies, sales services, design activities and the like. The remaining uses classified under the UCO are self explanatory (Home, 1989). Finally, some more general problems exist with the use of development control data. Two of the most common uses of such data have been, to provide an index of 'development pressure' and, to evaluate the impacts of land use planning policies, and these have led to debate over their shortcomings (Hebbert, 1989; McNamara, Healey, 1984; Brotherton, 1984; McNamara, McNamara, Mathrami, 1989; Rydin, 1989). Here the data are used to examine planning applications submitted both for change out of, and into, manufacturing use in London by borough. This produces a geography of expressed demand for these uses, and no claims are made towards measuring development pressure.

Table 6.3 shows the numbers of applications submitted, granted and refused for changes from manufacturing use in Central, Inner and Outer London between 1987 and 1991. Inner London received 385 such applications, 48.5% of all in London, Outer London received 359 applications, 45%, while in Central London only 49 applications for use changes from manufacturing, 6%, were submitted. Of the 793 applications submitted in London for change from manufacturing use between 1987 and 1991, 188, or 23.7% were refused. The Central London refusal rate was 18%, and in Inner and Outer London, 24%. The fact that many applications for change from manufacturing were refused does indicate that planning authorities can make a great deal of difference to land use change, however, the importance of development control for employment change is a much more complex issue as discussed in chapter five. [3]

[3] At an earlier stage of the research attempts were made at a decisions analysis of planning applications submitted for manufacturing land use change at the borough level. Borough refusal rates were compared to results from the survey which showed the degree to which the LPAs had attempted manufacturing employment protection. However, no systematic relationship could be determined. For example, of the 16 boroughs which had pursued employment protection policies it was found that 9 had above average refusal rates and 7 below, and the eight authorities which had not attempted to protect manufacturing jobs were equally divided above and below the average borough refusal rate. These results highlight the discretionary nature of planning decisions and caution against interpretation through decision analysis.

Table 6.3 : Number of applications decided for change from manufacturing use in Central, Inner, Outer and London, 1987 - 1991.

	Number of applications	Percentage of London total	Number of applications per 10,000 square metres of floorspace
Central	49	6.18	2.48
Inner	385	48.55	0.52
Outer	359	45.27	0.24
London	793		0.35

Notes :
(1) The number of applications do not include those which involved a change from manufacturing to manufacturing
(2) Figures for applications per 10,000 square metres of floorspace have been calculated using the 1986 floorspace totals from CIFS.

Source : London Development Monitoring System (see appendix one)

An Inner-Outer London distinction in the numbers of applications submitted for change from manufacturing use is not apparent, which is surprising given that Outer London contained so much more manufacturing floorspace in 1986. More applications may be expected from areas where more manufacturing is located but this relationship is not apparent in the numbers of applications per thousand metres^2 of floorspace. Instead, relative to existing floorspace, Central London received a high number of applications, and Inner London received over twice those of Outer London.

In fact data at the borough level reveal that the relationship between the amount of floorspace within a borough and the level of applications for change of use received is weak, and while it may be important in some cases it does not appear to be spatially consistent. However, many boroughs which received few applications are also those which had below average shares of industrial floorspace, notably Kensington and Chelsea, Sutton, and Redbridge. The location of the boroughs, relative to the main concentrations of economic activity, also appears to be an important factor. The four top ranking boroughs in terms of numbers of applications were Islington (97), Tower Hamlets (63), Hackney (53) and Southwark (41), all of which border the City of London, and may be the result of pressure from services activities exploiting the market potential of the City.

Disaggregating the applications by their proposed uses, table 6.4 offers further insights into the broad patterns of proposed developments. Each application which contained manufacturing as an existing use was selected and the relevant proposed uses were recorded and scored 1. The absolute figures use in part (a) of the table are the sum of the scores awarded each time any use was cited on an application. For example, shops have a score of 57, which means they were one of the proposed uses in 57 of the applications for change of use from manufacturing. The percentage figures used in part (b), indicate the percentage of total applications in which a use was cited.

Only five proposed uses were important in manufacturing change : shops, business, industrial, warehouses and residential. The business uses are particularly prominent, being cited on 490 applications, 61% of the total applications for manufacturing use change. Residential use formed a proposed use in 240 applications (30%), industrial in

Table 6.4 : The incidence of proposed uses for manufacturing land use change in Central, Inner, Outer and London, 1987-1991.

(a) Incidence of proposed use

	Central	Inner	Outer	London
Shops	13	10	34	57
Financial and professional offices	0	0	0	0
Restaurants	1	0	0	1
Business	48	258	184	490
Industrial	2	34	114	150
Warehouses	1	28	79	108
Non-Residential institutions	0	0	0	0
Leisure	0	0	0	0
Hotels	0	1	0	1
Residential institutions	0	2	1	3
Residential	6	117	117	240
Sui generis	0	0	1	1

(b) Percentage of total applications in which use was cited

Shops	26.53	2.60	9.47	7.19
Financial and professional offices	0.00	0.00	0.00	0.00
Restaurants	2.04	0.00	0.00	0.13
Business	97.96	67.01	51.25	61.79
Industrial	4.08	8.83	31.75	18.92
Warehouses	2.04	7.27	22.01	13.62
Non-Residential institutions	0.00	0.00	0.00	0.00
Leisure	0.00	0.00	0.00	0.00
Hotels	0.00	0.26	0.00	0.13
Residential institutions	0.00	0.52	0.28	0.38
Residential	12.24	30.39	32.59	30.26
Sui generis	0.00	0.00	0.28	0.13

Notes :
(1) The figures in the lower part of the table are derived by dividing the figure for each area shown in part (a)by the number of applications received by each area for change of use in manufacturing.

Source : London Development Monitoring System (see appendix one)

150 (19%), warehouses in 108 (14%), and shops in 57 (7%). In Central London, interest in manufacturing sites has been dominantly expressed by business uses, with slightly under 100% of applications submitted containing business amongst the proposed uses. The incidence of shops is also high in Central London applications; and residential uses were important, but much less so than in London as a whole. Industrial and warehousing uses have not expressed a high demand for manufacturing land in Central London planning applications. In Inner London, the pattern is slightly different. Business uses are still dominant, but industrial and warehousing uses, and to a larger extent residential uses, have all been heavily cited. In Outer London, the share of applications which propose business uses is again slightly less, the incidence of residential after uses is similar to Inner London, but the warehousing and particularly industrial uses are here expressing a significant interest in manufacturing land.

The results from the LDMS analysis are broadly consistent with those of chapter five in the sense that they show interest from business uses being expressed throughout London, but particularly focusing on the central and inner areas, while residential uses express more interest in the inner and outer areas. However, it would also seem that warehousing uses are proposed fairly frequently in Inner London, but much more so in Outer London, presumably as a result of lower land values. These spatial trends may be indicative of a crowding out effect of manufacturing floorspace, with industrial property in the inner areas surrounding the West End and City most under threat from business uses interested in locations which allow for the efficient exchange of services to these concentrations of economic activity. More surprisingly, there has been an interest in manufacturing land expressed by manufacturing uses. This suggests some 'recycling', but is also indicative of continued demands in London for manufacturing space that was raised as a surprising aspect of LPA policy in the previous chapter.

Table 6.5 develops this theme further, showing the numbers of applications submitted for change into manufacturing use over the 1987 to 1991 period in the three areas of London. The vast majority of applications for manufacturing use have been submitted to outer London planning authorities. This broad area has received 275 such applications or just under 71% of the London total. The inner London LPAs decided 107 applications for manufacturing use, or 28% of the total, while the central London

Table 6.5 : Number of applications decided for change into manufacturing us London, 1987 - 1991.

	Number of applications	Percentage of London total
Central	6	1.50
Inner	107	27.58
Outer	275	70.88
London	388	

Notes :
(1) The number of applications include those which involved a change from manufacturing to manufacturing

authorities received a very small number of applications, only 6, or 1.5% of the total. Data at the borough level reveals that a large proportion of these applications were submitted within relatively few boroughs. For instance, applications received in the five boroughs of Brent, Ealing, Hillingdon, Enfield and Hackney accounted for almost 40% of London's total applications for manufacturing use. These five boroughs are all prominent locations for manufacturing use and it would seem that in contrast to changes from manufacturing, the extent of existing manufacturing floorspace in any borough does appear to influence the locations of applications submitted. Correlating the borough proportions of total applications received with the proportion of existing floorspace from the CIFS data, produces a moderately strong Pearson's coefficient of 0.55. However, this result does not indicate that manufacturing land in London is simply being 'recycled' for the same use. Analysis of the LDMS data undertaken by the LRC themselves, reveal that of the 388 applications submitted for manufacturing use, 238, or just over 61%, did not contain manufacturing as an existing use. (Cowan, Gordon, 1993) This is an interesting spatial trend, implying that new manufacturing uses in London tend to locate next to existing and established industrial sites, while evidence presented earlier showed that the extent of existing industrial floorspace in any borough does not strongly influence the number of applications received for change from manufacturing use. The suggestion may be that pressures for change from manufacturing land are highly spatially specific affecting only some locations, and that new manufacturing developments tend to have their own locational requirements which broadly coincide with existing industrial sites. In other words the expansion of commercial uses and the decline of manufacturing may be trends that are to a large extent spatially independent.

The fact that applications for change of use to manufacturing are still being submitted in London suggests that much more complex processes are occurring in London's manufacturing than the simple eradication of manufacturing through a crowding out effect. Indeed, it also suggests that space constraints on manufacturing growth and expansion in the capital may not be as stringent as Fothergill and Gudgin have implied, and certainly not 100%. Furthermore, it has been shown that London LPAs have refused just under 24% of total applications for manufacturing use change, and this must have an important influence on the supply of industrial land in London and on the

extent to which crowding out actually takes place. Comparing the floorspace data presented at the start of this section with the employment data presented in the previous section provides evidence to suggest that change in London's manufacturing may not be as straightforward as assumed in crowding out and space constraint hypothesis.

Unfortunately, employment data are only available for the years 1981, 1984 and 1987, and so a comparison of employment and floorspace change is only really feasible between 1981 and 1984. Table 6.6 shows that in all areas floorspace has declined at less than half the rate of employment. Inner and Outer London exhibit almost identical trends, with employment declining by about 18% and floorspace by about 7%. In Central London, the difference between the two changes is more exaggerated, with employment declining at over five times the rate of floorspace decline.

As regards employment densities, Inner and Outer London also have almost identical ratios of jobs to floorspace, approximately 27 jobs per thousand metres^2 of floorspace in 1981. However, Central London differs having over 397 jobs per thousand metres^2 of floorspace. It is tempting to conclude that the reason for this is the presence of manufacturing headquarter establishments in the City and West End. However, in 1981 52% of Central London's manufacturing was in the printing and publishing industries, and a further 10% within clothing, office machinery manufacture, and certain electronics sectors. In fact the figure is likely to reflect headquarter activity to some degree, but is probably also indicative of the presence of certain types of smaller manufacturing establishments. Here space constraints and high land values may well provide an efficient environment only for sectors with low space demands and higher value-added products. To some extent such factors are likely to affect most manufacturing in London and this is reflected in the lower job to floorspace ratios found in England as a whole of 22.6 jobs per thousand metres^2 of floorspace in 1981 and 20.7 in 1984.

The figures for change in employment density show reductions in the job to floorspace ratio in all areas of London. In Central London, there were almost 19 less jobs per thousand metres^2 of floorspace by 1984, and a decline of approximately 3 jobs per thousand metres^2 in the rest of London. As a whole, London by 1984 had 10.3% less

Table 6.6 : Changes in manufacturing employment density, 1981 - 1984.

		Central	Inner	Outer	London
Employment change 81 - 84	(abs)	-4675	-37395	-72880	-114950
	(%)	-5.96	-18.31	-18.16	-16.81
Floorspace change 81 - 84	(abs)	-2300	-538100	-1088800	-1629200
	(%)	-1.16	-7.21	-7.34	-7.24
Employment per thousand square metres of floorspace 1981		397.16	27.37	27.05	30.40
Employment per thousand square metres of floorspace 1981		378.28	24.10	23.89	27.27
Percentage change in employment per 1000 square metres of floorspace		-4.75	-11.96	-11.68	-10.31

Sources : Census of employment (NOMIS)
DoE (1986) : Commercial and Industrial Floorspace Statistics. London : HMSO.

jobs per thousand metres^2 of floorspace than in 1981. This implies that one tenth of manufacturing jobs in the capital were lost without corresponding floorspace loss. Inner and Outer London again show similar trends with the job to floorspace ratio decreasing by approximately 12%, while in relative terms Central London experienced a low rate of reduction of just under 5%, but still comparably large given the large ratio in the base year.

The important issue here is the differences between rates of change in employment and floorspace in London. The rates of floorspace decline, while still significant and greater than the nation as a whole, were much less dramatic than employment decline. These trends suggests two major possibilities. First, that plants which are highly labour intensive have closed or have left London in search of less constrained and cheaper environments, and perhaps cheaper labour, and so reducing the ratio of jobs to floorspace. Second, that labour productivity may be increasing in London's manufacturing as suggested by the borough LPAs. This may be due to the introduction of new technology or through the re-classification of certain service jobs that used to be provided in-house in manufacturing, and are now in free-standing service industries. Or, it may be due to the rationalisation and intensification of work processes. In fact these possibilities are generally consistent with the explanation of urban manufacturing decline put forward by Fothergill and Gudgin (1982) where manufacturing employment falls in urban areas, while the employment of technology and capital in remaining plants induces a rising floorspace to worker ratio.

Caution is required in the interpretation of these results. It is tempting to conclude that changes in employment density verify the LPA views that the factors that underlie employment change are outwith the scope of planning control because jobs are being lost without corresponding losses in floorspace. However, there is no indication in the CIFS data that manufacturing land in London is not lying vacant. The important point at this stage is that indicators other than employment may not signify the complete eradication of the London manufacturing base. It appears that more complex processes may be at work than the 'crowding out 'of manufacturing establishments or the physical constraint on growth, and this requires further attention because it may be crucial in understanding the relationship between land use planning controls and manufacturing

change in London. The use of employment and floorspace data have only permitted examination of particular aspects of London's manufacturing. The demand for labour and land from manufacturing industries are each derived demands required by firms to manufacture outputs. A more direct dimension of analysis would consider the actual numbers of firms, and output and productivity change, in London's manufacturing.

6.4 Firm entry, output and productivity change in London.

The following section focuses only on manufacturing industry in London, exploring aspects of change directly related to productive capacity. The purpose is to probe deeper into what has been happening to London's manufacturing sector in the context of manufacturing firm entry, output, and productivity. Net change in the stock of manufacturing firms is examined using data on businesses registered for VAT between 1981 and 1991. Gross value-added data are used to examine changes in manufacturing output and are available for London for the years 1984 to 1991, and at the borough level from 1987 to 1991.

A full description of these data sets is provided in appendix one. However, it is worth stressing here two important points relating to the VAT and GVA data sets respectively. First, is that the definition of manufacturing in the VAT data is not consistent with other sources used in the thesis. A category called 'production' is defined which comprises divisions 1 to 4 of the 1980 SIC, rather than the official definition of manufacturing which includes divisions 2 to 4. Using data which describes the number of reporting units to the CoE, it was found that in 1991 only 2.5% of total units in London involved in 'production' were classified within division one. Thus, while there is a definitional anomaly, the scale of industrial activity within division one in London is extremely small and this should mean that the VAT data still

provide a good indication of manufacturing activity.[A] The second point to be made clear concerns the availability of time-series in the GVA data set. The CSO do not publish the regional and district data in constant prices because inflation is thought to vary spatially throughout the country. For analysis here, time-series comparison was essential. The CSO provided a consistent national price index of manufactured output from 1984 to 1991 in constant 1990 prices. This deflator has been cited in the literature as the most appropriate for GVA data (Borooah, Lee, 1991), and has been used to estimate the figures in real terms. Thus, some unavoidable inaccuracy may have been created in applying a national deflator to the regional and district data.

[A] Three additional points concerning the use of VAT data for the analysis of firm formation should be stressed. First, is that the data exclude firms not registered for VAT either because they trade mainly in exempt or zero-rated goods or services. Second, is that firms do not have to register for VAT if they have a turnover below the required threshold which is currently set at £45,000. This means that changes in the stock of firms do not necessarily correspond to firm births or deaths, as a firm may have been trading for some time without having reached the turnover threshold or may dip below the threshold and thus deregister but continue trading. A third problem with the VAT data relates to their suitability for time series analysis. The turnover threshold has been subject to change in the past as has the definition of the goods and services which are exempt or zero rated. This may have the effect of causing some definitional inconsistencies over time. Despite these important limitations, the VAT data are one of the most comprehensive sources of information that exist on firms and have been widely used in geographical studies of firm change.

(Borooah, Lee, 1991), and has been used to estimate the figures in real terms. Thus, some unavoidable inaccuracy may have been created in applying a national deflator to the regional and district data.

Table 6.7 shows the change in the stock of manufacturing firms in London for two periods, 1981-1987 and 1987-1991. Greater London exhibits some surprising results given the scale of employment decline in the capital over the period. Between 1981 and 1987 there was a net exit of 1,200 manufacturing firms in London. Relative to the employment decline over this period of -30%, the decrease in the stock of firms is extremely small, amounting to only 5% of the 1981 base. More surprising is that between 1987 and 1991 an actual net entry of firms in manufacturing took place, the stock of firms increasing by just under 1%, while employment continued to fall by over -25%. For both periods Britain saw a much more favourable relative performance in the change in the stock of firms compared to London. Nonetheless, the birth to death ratios show that new manufacturing firms were still being established in London over the 1980s, and that at certain times over this decade the entry of these firms more than compensated for the exit of other firms.

The comparison with employment change is interesting. Graham and Spence (1995) have examined establishment and employment data from the Census of Employment, showing the increasingly small scale nature of London's manufacturing establishments. These data were available over the 1987 to 1991 period. It was found that in 1987 the average number of employees per firm in London was 24.2 and in Britain 34.7. By 1991 these figures had changed to 19.8 and 30.1 respectively. Furthermore, the proportion of London manufacturing establishments in the 1 to 4 employee range increased from 38.9% to 43.6% over the period, and in the 5 to 10 employee range from 25.1% to 25.5%. The proportion of establishments in all larger sizeband categories decreased. Relative to Britain, London's manufacturing establishments now employ on average considerably less people, and are more concentrated within smaller sizebands. Unsurprisingly, further examination of the data show that the average number of employees per establishment is falling in all London boroughs.

Table 6.7 : Change in the stock of manufacturing firms in London, 1981 to 1987 and 1987 to 1991.

	Net change in stock				Births to deaths ratio	
	1981- 1987		1987- 1991		1981-1987	1987-1991
	(abs)	(%)	(abs)	(%)		
Central	-2600	-56.64	-630	-31.66	0.54	0.59
Inner	1060	11.50	530	5.16	1.09	1.08
Outer	340	3.57	310	3.14	1.05	1.05
London	-1200	-5.14	210	0.95	0.95	1.01
Great Britain	18666	15.11	12872	9.05	1.20	1.19

Source : DTI Business registrations and deregistrations. (NOMIS)

The spatial breakdown in table 6.7 allows the performance of each area of London to be differentiated. Over both periods net firm exit in manufacturing industries occurred in Central London. The early period saw Central London losing 2,600 manufacturing firms (57%) and the later period some 630 firms (32%). In complete contrast, net firm entry occurred in both Inner and Outer London over both periods. For Inner London this increased the stock substantially, by 11.5% in the first period and 5.2% in the second. Analysis of data at the borough level shows that of the 12 inner boroughs, decreases in the stock of firms occurred only in Camden and Islington. In Outer London, the stock increased by 3.6% in the first period and by 3.1% in the second. Thus, by the end of the decade more manufacturing firms were operating in Inner and Outer London than in 1981, while Central London had significantly less.

These trends in firm entry and exit raise important issues about manufacturing change in London. First, the spatial variation in the change in the stock of businesses indicate that, if manufacturing is being crowded out of London, this effect is most detectable in Central London, and as mentioned earlier, is likely to be linked to the movement of printing and publishing. In Inner and Outer London a crowding out effect may well be taking place in selected areas, but it has not adversely affected the number of manufacturing firms operating within these broad zones of the capital. Second, and perhaps more important, the evidence does not support the view of manufacturing change associated with the space constraint thesis, or indeed that expressed in the employment analysis presented in chapter four. The trends in manufacturing employment and firm entry are somewhat irreconcilable. Change in manufacturing activity in London has not simply been one of decline, which has been predominantly characterised by establishment closure. The birth to death ratios shows that while London may have a high death rate of manufacturing firms, it also has high birth rates. The implication is that it is not simply decline which characterises London's manufacturing change, but a mixture of both growth and decline, with new and perhaps smaller firms being formed at a relatively high rate.

These results broadly support the findings of the LPA survey. Authorities cited the closure of manufacturing firms as an important process underpinning employment decline, yet most had policies which sought to guide or influence the location of new

manufacturing developments. The VAT data are surprising in the extent to which they challenge the received wisdom described in chapters one and two that London's experience of manufacturing change is one only of decline, and that space is largely not available for manufacturing growth and expansion in the capital.

Considering now change in the output of London's manufacturing industries, surprising trends are also shown (Table 6.8). Over the 1984 to 1991 period, London's manufacturing output declined by 9.6%, or by £980m in 1990 prices. While substantial, this decline has to be compared to a loss of 36.9% of manufacturing jobs over the same period. The yearly figures show particularly interesting trends. In the first year output grew by 1.2% and subsequently declined by 1.7% between 1984 and 1985. In years following, output increased quite substantially so that by 1989, the level of output in London's manufacturing industries was actually greater than that of 1984. With the onset of recession at the end of the decade GVA felt quite substantially. In fact, given the growth that occurred throughout the 1984 to 1988 period, the decline in output since 1988 accounts almost entirely for the rate of loss over the period as a whole. Labour demand by London's manufacturing industries conversely exhibits consistent decline.

The differences between output and employment change are important and require further attention. It was mentioned previously that the demand for employment can essentially be thought of as a derived demand, in the sense that labour is required by manufacturing to produce a given output. If output was to decline one may expect employment to fall, while output growth may be expected to stimulate an increase in the demand for labour. There is however, no reason to assume that labour demands will be temporally or spatially constant. It must be that over time, less employees are required to produce a unit of output because labour productivity has increased, or it may be that labour productivity is higher in some locations than in others. If so this would have important implications for London's manufacturing employment change.

Productivity may be defined and measured in different ways often depending upon the units of factor inputs which are considered (see Diewert, 1992). For example, labour productivity measures output per unit of labour, capital productivity measures output per unit of capital, and total factor productivity measures output in units of all inputs to

Table 6.8 : Gross valued added in London's manufacturing industries 1984 to 1991.

	Gross Value Added (£s million)		Yearly change in output (£s million)	(%)
1984	10165			
1985	10290	84-85	124	1.22
1986	10116	85-86	-173	-1.68
1987	10277	86-87	160	1.59
1988	10704	87-88	427	4.16
1989	10913	88-89	288	2.69
1990	9905	89-90	-1088	-9.89
1991	9186	90-91	-719	-7.26
		1984-1991	-980	-9.64

Source : CSO (1986 - 1993) : Regional Accounts. London : HMSO.

production. For the moment, the productivity of an economy can be broadly thought of as the value of output produced by a unit of input, and thus, labour productivity growth occurs when the output per employee is greater in one period than in the previous period. Within the discipline of economics, this measure of total output per unit of labour is referred to as the average product of labour or average productivity of labour, as distinct from the marginal product of labour which describes the incremental contribution of output made by the addition of one unit of labour assuming that the amounts of all other factors of production are held constant. (Bowers, Baird, 1971) This is an important distinction which is drawn upon in chapter seven in models used to explain spatial productivity differences. In this thesis, as in much of the urban economics productivity literature introduced in the next chapter, unless otherwise specified, the expression 'labour productivity' refers to the average product of labour. In certain circumstances the measurement of average productivity is associated with 'short-run' economic analyses in which the level of capital is given as fixed. The use of the average productivity measurement of labour productivity does not imply that labour is the only variable factor of production, and it is understood that changes in ratio of output to labour could be induced by changes in the utilisation of other factor inputs, as well as a variety of other variables. Indeed, it is these potential effects that are of interest.

The differences between manufacturing employment and output change are examined in Table 6.9. Comparing output and employment change between London and Britain shows that in each aspect of manufacturing change London's performance has been poor. Britain actually experienced a growth in manufacturing value added of £5,240m (5.66%), and subsequently the share of national manufacturing output in London fell from 11.0% in 1984 to 9.4% by 1991. However, the output change figures also show that in both Britain and London the most severe declines occurred in the recessionary 1989 to 1991 period. In employment terms, rates of decline were again much higher in London than in Britain in all periods defined over the 1980s.

Bringing together change in the two indicators as a measure of labour productivity, in units of output per employee, provides an extremely important index of manufacturing change. Table 6.9 shows that in 1984, the output per employee in London's

Table 6.9 : Employment, output, and labour productivity in manufacturing industry in London and Britain.

		1984-1987	1987-1989	1989-1991
Output change	London	1.10	6.96	-16.44
	Britain	10.80	9.80	-13.06
Employment change	London	-15.38	-7.86	-19.11
	Britain	-4.12	0.72	-11.08

		1984	1991
Labour Productivity (£s thousand)	London	17.86	25.60
	Britain	17.38	21.39

		(£s thousand)	(%)
Change in labour Productivity	London	7.74	43.34
	Britain	4.00	23.07

Sources : Census of Employment (NOMIS)
CSO (1986 - 1993) : Regional Accounts. London : HMSO.

manufacturing of £17,860 was only slightly higher than that for Britain at £17,380. By 1991, productivity levels were significantly higher in London than Britain, £25,600 compared to only £21,390. Manufacturing employees in the capital were producing over £7,700 more in real terms than they were in 1984, a phenomenal growth in labour productivity of around 43%. In Britain workers were producing approximately £4,000 more by the end of the decade (23%). Thus in London, labour productivity has grown at almost twice the rate of the nation as a whole, and however accomplished, it must have had a substantial impact upon rates of employment decline within the capital, both relative to the nation, and in absolute terms. The main difference between London and Britain in the ways in which productivity gains have been achieved is that in London both manufacturing value-added and employment were less in 1991 than in 1984, while in Britain, value added actually grew slightly while employment declined. Thus, London's outstanding rate of productivity growth cannot be explained by superior output growth but instead by exceptionally high rates of employment loss in manufacturing industry.

The differences between London and Britain remain, and manufacturing industry in London now has significantly higher labour productivity than the nation. Using data available at the local authority district level for the 1987 to 1991 period, a spatial dimension can be introduced to the changes in manufacturing production discussed above. The spatial shares of manufacturing value-added in 1987 were similar to those for employment. Central London contributed about 11% of output, Inner approximately 29% and Outer 60%. In Central London, rates of loss of output and employment between 1987 and 1991 have been very similar, around 40% (Table 6.10). In Inner London output actually grew by 8.5%, while employment declined by 18%; and in Outer London both output and employment declined, though the latter declined at a much faster rate than the former. The result of these changes is that output per employee has increased significantly in Inner London and to a lesser extent in Outer London, but only marginally in Central London. It is highly likely that these similarities in rates of decline in output and employment in central London result from the relocation of the printing and publishing industry shown in chapter two. The increases in Inner London's output and productivity are consistent with this possibility. The highly productive

Table 6.10 : Output, employment and labour productivity in manufacturing in central, inner, outer and Greater London, 1987 - 1991.

		Central	Inner	Outer	London
1987	(£s million)	1173	2952	6148	10271
	(%)	11.42	28.73	59.85	
1991	(£s million)	747	3203	5233	9183
	(%)	8.14	34.88	56.99	
1987-1991	(£s million)	-426	250	-915	-1088
	(%)	-36.32	8.48	-14.88	-10.59
Output change	1987-1991	-36.32	8.48	-14.85	-10.59
Employment change	1987-1991	-40.09	-18.30	-26.78	-25.47
Labour productivity	1987	25.78	20.25	21.19	21.33
(£s thousand)	1991	27.40	26.89	24.63	25.59
Change in labour productivity	(abs)	1.62	6.64	3.44	4.26
	(%)	6.30	37.81	16.25	19.96

Sources : Census of Employment (NOMIS)
CSO (1983 - 1993) : Regional Accounts. London : HMSO.

printing industries of Central London have moved into inner boroughs raising the overall levels of output and labour productivity.

Two important points about manufacturing change in London arise from the examination of the evidence presented in this section. First, it would seem that the effects of crowding out trends within London appear highly spatially specific, being identifiable only really in Central London and perhaps to a small extent in Inner London. While the expansion of functions related to London's role as a 'global city' may have been important in displacing manufacturing activity from some areas of London, it has not been clearly shown by the indicators used here, especially for Outer London where most manufacturing is. Thus, a question exists over any interpretation of London's manufacturing change which views land competition as a dominant influence. There is no sound reason to assume that the boroughs which held the largest shares of manufacturing employment and output over the decade, for example Barking and Dagenham, Ealing, Enfield and Hillingdon, have lost manufacturing through its displacement by global city functions. So while crowding out is likely to provide at least some explanation for the decline of manufacturing in specific areas of London, it is likely to be much less important in others.

Second, the indicators presented in this section demonstrate that to view London's manufacturing as a sector in terminal decline which has stringent physical constraints on growth and expansion, as is often predicated on the basis of employment trends, may well be a mis-interpretation of change. The performance of London's manufacturing industries appear much more favourable in firm entry, output and productivity terms than in employment terms. Evidence presented in this chapter indicates that one factor which represents a more important trend is increased productivity. The exact ways in which productivity growth has been achieved are not wholly apparent here, but a number of distinct possibilities exist. First, it may be that labour has been replaced by capital. Second, the rationalisation and intensification of labour inputs to manufacturing may be important. Third, and partly related to the last possibility, productivity gains may have been created through the contracting-out of service functions which were previously provided in-house in manufacturing. The loss of jobs entailed may show up as a productivity increase because employment data do not distinguish between

productive and non-productive manufacturing employment while the GVA data do. In London, the existence of a highly specialised and developed service sector perhaps offers increased scope for this than elsewhere. Finally, it may be that Sassen is correct in arguing that selectivity has been occurring in London's manufacturing change, with lower value output industries moving out of London or closing down, leaving behind higher value activities, and perhaps some headquarter establishments, where the output to labour ratio is high. Given the CoP has attempted to exclude non-production activities however, and that headquarter functions are not thought to enter into the published figures (see appendix one), this issue should not be over-emphasised.

A recent study of change in the London economy over the 1980s has argued that higher rates of growth in labour productivity in both the manufacturing and services sectors could explain London's poor employment performance relative to the nation, in almost all sectors of the economy (Graham, Spence, 1995). Furthermore, it was shown that when output and employment are considered together spatially in a measure of productivity, the usefulness of basic concepts in economic geography such as deindustrialisation and tertiarisation can be challenged. More importantly, it was argued that for a regional economy, very high rates of productivity in certain sectors were not necessarily beneficial if the consequences were expressed in acute job loss, and thus unemployment

It may be therefore that employment trends provide a distorted account of London's actual manufacturing change, and that in fact, productivity growth has been a major influence within London's vast decline in the demand for manufacturing labour. Some modest possibilities exist through regression analysis to demonstrate the importance of increased productivity for London's manufacturing employment performance. Using data at the borough level the influence of productivity change on manufacturing employment change across London can be examined. Since the spatial scale of analysis is at borough level and since boroughs do not comprise self-contained economic entities, the specification of a production function or a model of labour demand would be theoretically unsound and so is not attempted here. Instead, a very simple regression has been conducted, which, it should be stressed, is severely limited by the extent and quality of data at the borough level.

The dependent variable in the regression is borough manufacturing employment change (MEC), expressed in relative terms. The independent variables, also expressed in relative terms, are productivity change (MPC), a variable reflecting the borough's industrial structure (SME), and producer service employment growth (PSEC).[4] Thus, the regression hypothesises that manufacturing employment change varies by borough, dependent on the extent to which productivity growth destroyed jobs, on the extent to which the industrial structure of the borough contained industries in which employment change in London as a whole has been below or above the average for all manufacturing, and on the extent of producer service employment growth reflecting a crowding out effect. Borough data were available from 1987 to 1991, and the regression was conducted over the 1987 to 1989 period to determine the relationship, as far as possible, outside the special context of the recession period.

The results of this regression, with the t-ratios in brackets, are provided below :

$$MEC = \text{constant} - 0.37MPC + 1.07SME - 0.07PSEC \qquad R^2 = 0.86$$
$$(-12.24) \qquad (2.48) \qquad (-0.87)$$

The forms of the relationships determined in the regression are much as expected. Productivity growth was negatively associated with employment change, and the t-ratio was significant at the 0.01 level. In other words, the boroughs with a relatively favourable employment performance were those with lower rates of productivity growth. The regression also indicates that a favourable industrial structure is spatially associated with a favourable employment performance, and the t-statistic for this variable is significant at the 0.05 level. However, as with correlations conducted earlier in this chapter, a negative spatial relationship can be determined between manufacturing employment decline and producer service growth, but it is not statistically significant as shown in the t-statistic above.

The above represents nothing more than a simple attempt to highlight broad spatial relationships. However it does demonstrate that productivity growth appears to be an

[4] The variable reflecting industrial structure, similar to that used by Keeble (1976), comprises a set of structural components from a shift share analysis of borough manufacturing employment change, using Greater London as the benchmark area. Correlation between this variable and the productivity variable was not detected.

extremely important influence in manufacturing employment change across the capital. As with the rest of the evidence presented in this section, the main conclusions are that crowding out and space constraint effects do not offer a single explanation for spatial trends in manufacturing, and that changes in productivity, output and firm stock, indicate a dynamic change in London's manufacturing which is not expressed in these accounts.

6.5 Discussion.

This chapter has examined various different aspects of manufacturing change in London to indicate some of the processes that may underlie decreasing demand for manufacturing employment in the capital. It has been shown that causal relationships resulting from land competition and space constraints are not fully demonstrated by the existing evidence. Furthermore, this chapter has presented materials which indicate that trends in manufacturing change also involve new firm formation, productivity gains, and new demands for land within London, all additional to the trends of decline emphasised in previous literature.

Important implications arise in light of the LPA survey results presented in chapter five. It would seem that land use planning controls may indeed be able to exert only a minor influence on manufacturing employment change in London. Job loss and land use change may to a large extent be independent of one another. Employment decline seems to be highly influenced by output and productivity change as well as floorspace change, and clearly, as the survey suggested, LPAs cannot hope to influence fundamental changes in the nature of production processes. The important point is, that the demand for both labour and land are derived demands, and the component which must be of central importance in London's manufacturing change is the demand for output. In this respect, it could be argued that only limited success could be achieved in attempting to influence the derived demand for labour through land use regulation, because ultimately these demands are a function of change in manufacturing output, and furthermore the relationship between value added and derived demands appears be changing over time.

The chapter has also demonstrated the land use planning implications of manufacturing change through a consideration of the crowding out and space constraint hypotheses. One of the main problems identified with the crowding out hypothesis is that in essence it assumes spatial uniformity in a 'squeezing out' effect of manufacturing across London. The use of the employment and LDMS data have shown that while it may be important in certain locations within the capital, particularly Central London and some inner boroughs, it cannot offer a comprehensive explanation for change. In particular, 'global' functions, like manufacturing activities, tend to have their own intra-metropolitan locational requirements, and the data presented in this chapter have not indicated a great deal of coincidence with manufacturing decline. Indeed, one of the most important dimensions of the analysis presented in this chapter is the indication that explanations for London's severe manufacturing employment decline should be sought elsewhere. The LDMS data in particular have shown that while applications submitted for change from manufacturing use are not strongly influenced by the extent of borough industrial floorspace, those for change into manufacturing are. This suggest two important points. First, that not all manufacturing land across London is under threat of use change, and second, that new industrial developments will tend to locate where manufacturing already exists, and thus that they have their own, perhaps separate, locational requirements. Hall (1962) argued that the historical development of manufacturing and service industries in London occurred in locations which were largely complementary. It may be that to a large extent this is still the case.

The chapter has also shown that employment densities are falling across London because manufacturing employment is declining at a much faster rate than floorspace. In addition, many areas of London have experienced a net entry of manufacturing firms over the decade, and evidence exists to show that industrial land is still being demanded in London over the 1980s despite such severe job loss. These trends are suggestive of a much more dynamic change in London's manufacturing than one would conclude on the basis of employment trends alone, and are inconsistent with space constraint hypothesis. In essence, the ways in which industrial manufacturing are measured are crucial to any interpretation of change. Certain manufacturing firms still want to be located in London, and a fuller understanding of these trends is likely to produce a more accurate account of manufacturing change than simply viewing it as a process of

decline, and basing analyses on that assumption. The crowding out and space constraint hypotheses focus largely on decline, and in doing so present an account of change which cannot readily explain the trends and counter-trends of manufacturing change that have been outlined in this chapter. Indeed, the empirical investigations suggest that the general concept of urban deindustrialisation emphasised in the theoretical perspectives reviewed in chapter two may need to be re-evaluated in light of these inconsistencies in manufacturing change.

What would appear to be an extremely important trend, and one which has powerful potential to explain, or at least reconcile, the inconsistent magnitude and direction of change in aspects of the London manufacturing over the 1980s, is the issue of higher and increasing labour productivity. Productivity growth demonstrates that the indicators of output and employment are changing in very different ways, and in this respect it may well be the key to understanding why there are continuing demands for manufacturing land in London, why employment densities have been falling across London, why manufacturing establishments now employ considerably less people, and why the stock of firms does not appear to be diminishing as rapidly as might be expected. It has been argued above that productivity growth underpins employment decline across London and this supports borough responses presented in chapter five which ranked the shedding of jobs within existing establishments as significant. Most important, the chapter has shown that London exhibits higher rates of productivity and productivity growth than the nation as a whole. This difference between London and the nation is crucial as it may provide an explanation for the severity of London's employment decline. The shift share analysis of manufacturing employment in chapter four produced strong differential components which resulted in lower rates of employment change in the capital than in the nation as a whole. It may be that to some extent these differential values reflect the higher growth of labour productivity within London.

6.6 Conclusions.

To conclude, labour productivity in the London manufacturing sector requires additional attention in this thesis, because it appears to be a central characteristic of

change over the 1980s which holds potential to explain the experience of manufacturing employment decline in the capital. That London exhibits higher productivity and productivity growth than the nation is an extremely surprising result given the emphasis placed on the deindustrialisation of London in previous literature. On the surface, the indication may be that London's manufacturing sector is actually rather efficient, with higher rates of return to labour. The issue of spatial differentials in productivity has received little attention in the mainstream economic geography literature largely because output data at the urban level has not been available until recent years. However, it does raises a number of important research questions which offer the potential to further the understanding, not only the relationship between land use planning controls and manufacturing employment change, but the actual unique nature of change in London's industrial manufacturing sector. For example, if productivity in the capital is so superior, then why has London seemingly lost so much manufacturing activity over the past three decades through, for example, the urban rural shift? In other words, if London is so productive then why does more manufacturing not exist here? To what extent is employment data be 'overstating' the industrial decline of London? Are agglomeration effects the dominant factor behind London's increased productivity, and if so then why is productivity increasing at such a phenomenal rate when agglomeration economies for manufacturing are supposedly in retreat? Or, is the process of urban manufacturing change sectorally specific? Are cities losing labour intensive industries and retaining higher value added activities with higher rates of return to labour?

These issues are tackled in the following two chapters. Chapter seven begins by asking the simple question : why does London exhibit such a high level of labour productivity in manufacturing today? With resort to a literature which specifically considers the issue of labour productivity in cities, it is possible to explore this question and to test the significance of some explanatory variables. Results generated then feed into chapter eight, where dimensions of productivity change in London are considered, particularly with respect to changes in the structure and specialisation of London's manufacturing.

Chapter 7 : An empirical analysis of London's manufacturing labour productivity : the production function approach.

7.0 Introduction.

Labour productivity in the London manufacturing sector is now considerably higher than in the nation as a whole. This appears to be an extremely important characteristic of London's manufacturing, holding the potential to reconcile many of the seemingly inconsistent aspects of change in the London industrial base over the 1980s. The following chapter investigates some reasons why London exhibits such a high level of productivity. To do this, a body of research which has set out explicitly to explain the reasons behind the observed higher rates of manufacturing productivity in urban areas is considered. Techniques set out in this literature are applied to the British case in an attempt to pin down the influence of a set of explanatory variables on spatial productivity differences through econometric modelling within the theoretical framework of the production function. To use such techniques it is necessary that the analysis be conducted over spatial units which comprise the nation, rather than simply for London alone. It is argued in this chapter that this type of modelling approach allows a more sophisticated analysis of the factors underlying spatial productivity differences than would be possible by simply continuing to examine ratios of output to labour.

The chapter begins by outlining previous spatial productivity research and the production function methodology. It then goes on to present a statistical design which applies these modelling techniques to Britain. Issues related to the data and models used are next considered. Results from the models are presented in section 7.5 and the implications of the findings for London are then discussed. Conclusions are drawn in section 7.7.

7.1 Previous spatial productivity research and the production function approach.

To date research on spatial productivity has been most advanced by the disciplines of urban economics, regional science, and economics more generally. Excellent summaries

of this literature can be found in Gerking (1994) and Moomaw (1983a). The majority of this research has been conducted in the US and has focused on manufacturing industry due in both cases to the availability of appropriate data.

Research has concentrated on assessing the significance of a defined set of variables on spatial differences in levels of labour productivity. These may include the ratio of capital to labour, access to technology, the age of capital stock, the skills base of the workforce, and the role of scale economies internal to the firm arising from optimum plant size. A specific branch of this work has been concerned with 'urban effects', where labour productivity is related to the size of cities and the influence of agglomeration economies, in addition to the other defined variables (Shefer, 1973; Sveikauskas, 1975; Segal; 1976; Caralino, 1979; Moomaw, 1981a; 1981b; 1983a; 1985; 1988; Louri, 1988; Soroka, 1994).

The urban productivity research is of direct relevance here because it has sought to explain the general observation that large cities do tend to exhibit higher levels of labour productivity in manufacturing (Gerking, 1994; Henderson, 1988). Agglomeration economies have formed an important component of explanation, describing the productive advantages of spatial concentration in urban areas resulting from two distinct types of scale economies. First, urbanisation economies, which arise through industrial location in large population centres with expansive and variously skilled labour markets and specialised service sectors to interact with manufacturing industry. Second, localisation economies, which are generated through the increased scale of industries operating in an area, and generate efficiency gains reflecting economies of inter-industry specialisation, labour market economies, and ease of communication between firms (Mills, 1972; Richardson, 1978a). Thus, urbanisation economies are those which are external to the firm and the industry but internal to cities, while localisation economies are external to firms but internal to the industry.

A large body of research has tackled the issue of why spatial differences in productivity exist. Of particular importance is that in various empirical contexts analysts have shown that large cities tend to have higher productivity in manufacturing and this is directly relevant to the findings of the previous chapter. Before reporting some of the main

research results, it is first worth discussing the general methodology used in spatial productivity studies.

Empirical studies of spatial productivity differences have tested the significance of explanatory variables through multiple regression analyses within the framework of a production function. A production function describes, essentially, the relationship between inputs and output in production, and the technical conditions under which firms or industries operate (Doll, Orazem, 1984; Bowers, Baird, 1971). It maps from inputs onto the maximum feasible level of outputs, in what Berndt (1991) describes as "an engineering relationship, reflecting technology and the laws of nature" (Berndt, 1991, 63). For example, in spatial productivity research, a production function is usually specified which takes the following general form :

$$Q = g(A)f(K,L), \qquad [1]$$

where Q is value added, g denotes Hicks-neutral productivity or Total Factor Productivity (TFP)[2], A is a vector of variables which affect productivity, K is capital input, and L is labour input. What [1] above actually means for any one point in time is that output is a function of the level of capital and labour employed, as well as all other factors linked to the total volume of production represented by g(A) (Caralino, 1979). Thus, the effects of city size, and the other spatially differentiated variables, which are used to explain spatial patterns of labour productivity other than labour and capital, would enter the production function under A. In this case, g (A) can be interpreted as simply the residual increase in productivity after allowance has been made for the use of factor inputs labour and capital.

[2] Hicks-neutral productivity describes technology, in a very broad sense, which enters the production function in such a way as to increase the efficiency of both labour and capital, but to leave the optimal combination of the two unaffected, so that the marginal rate of substitution remains the same (Bowers, Baird, 1971; Layard, Walters, 1978). TFP refers to differences in overall productive efficiency after accounting for differences in the efficiency of factor inputs (Moomaw, 1981a; 1981b; Borooah, Lee, 1991; Vagionis, Spence, 1994). Bowers and Baird (1971) describe distinct way in which technology is thought to enter the production function. For example, Harrod-neutral technological growth describes the situation in which labour efficiency, but not that of capital, increases with technology (labour augmenting technology), while Solow-neutral describes the opposite situation (capital augmenting technology). The assumption of Hicks-neutral productivity in the spatial productivity research simply provides a convenient means of estimating the effects of external economies on overall productive capacity separately from those that arise through changes in factor inputs.

Various different mathematical specifications of the production function are used. Excellent summaries of the functions and their main properties can be found in Chiang (1984), Birchenall and Grout (1984) and Berndt (1991). It is unnecessary here to provide a detailed discussion of production functions. However, at this stage it is worth taking examples of two of those most commonly used, the Cobb-Douglas and Constant Elasticity of Substitution (CES) functions. These will serve to illustrate the theory of production functions and to introduce the two main types of functions discussed in this chapter.

The Cobb-Douglas function takes the general form :

$$Q = AK^{\alpha} L^{\beta},$$

[2]

where Q is output, K is capital and L is labour. A is an efficiency parameter of the function which is related to the state of technology, such that for given values of K and L the magnitude of A will proportionally affect the level of Q, and the remaining parameters, α and β, are positive fractions. In fact these exponents of K and L are the partial elasticities of output with respect to each input. The main properties of the Cobb-Douglas function are first, that it is homogenous of degree $(\alpha + \beta)$, implying that if each input is changed by a multiple m, total output will be changed by $m^{(\alpha+\beta)}$, second, that in the special case where $(\alpha + \beta = 1)$ it is linearly homogenous and thus displays constant returns to scale (CRS), and third, that it is characterised by a constant unitary elasticity of substitution between the factors L and K. This third property implies that relative factor shares will change in a proportionate way to changes in factor input prices.

The CES production function differs from the Cobb-Douglas in that although it still displays a constant elasticity of substitution this is not unitary, and so can take a value other than one. The CES function takes the form :

$$Q = A\left[\delta K^{-\rho} + (1-\delta)L^{-\rho}\right]^{-1/\rho},$$

[3]

where Q is output, K and L are the factors of production, A is the efficiency parameters, and δ is the distribution parameter which describes the relative factor shares and is equivalent to α and β in the CRS specification of the Cobb-Douglas function. However, it is the substitution parameter ρ in the CES production function which determines the

value of the constant elasticity of substitution, and for which there is no counterpart in the Cobb-Douglas specification. An additional difference between the CES outlined in [3] above and the Cobb-Douglas is that it is homogenous of degree one, and thus, like all linearly homogenous production functions, displays CRS. However, while the 'standard' CES function such as described in [3] is CRS, this is not a requirement of the CES function generally and it is possible to define and estimate a CES under non constant returns to scale.

The Cobb-Douglas and the CES are the two types of production function considered in this chapter. It is however worth mentioning briefly here the Translog function, which is sometimes used in the estimation of production function parameters in the spatial productivity literature (Louri, 1988; Henderson, 1988). The Translog function is essentially obtained by taking a second order Taylor-series expansion of some arbitrary production function, thus avoiding the need to specify any particular functional form by allowing for a higher order approximation under Taylor's theorem. (Chiang, 1984). The advantages of the Translog specification is that it is a very general and flexible form which avoids unnecessary restrictions and assumptions for example in relation to returns to scale and to the elasticity of factor substitution.

Particular specifications of production function, therefore, have their own unique mathematical properties which translate into specific economic meanings, for example, in relation to returns to scale or the elasticity of factor substitution. However, the main use of production functions in the spatial productivity literature has been simply to determine the effects of external economies on the efficiency parameter of the function, given the assumption of Hicks-Neutrality. In fact the main justification for the use of the production function approach in this literature is that it provide a theoretically sound framework which controls for factors inputs to production allowing for the examination of how external factors affect the efficiency of production.

Various specifications of production function have been used in the literature, including Cobb-Douglas (Aaberg, 1973; Segal, 1976; Moomaw, 1985; Henderson, 1988), Constant Elasticity of Substitution (CES) (Shefer, 1973; Sveikauskas, 1975; Caralino, 1979; Moomaw, 1983b), as well as Taylor-series expansion (Louri, 1988). The choice of production function

framework is frequently determined by data availability, particularly in relation to data on capital services which is often not available at a detailed spatial level. For example, Sveikauskas and Shefer have opted to use variants of the CES class of production function where it is possible to estimate the influence of spatial effects in the absence of information on capital. Other authors have criticised this method and attempted to create proxies for capital, such as non-labour costs per unit of labour (Aaberg, 1973, Soroka, 1994), or have even constructed estimated measures of capital, for example through the perpetual inventory method (Harris, 1983; Garofalo, Fogarty, 1987). Summaries of the methods used in these cross sectional analyses can be found in Moomaw (1983a) and Gerking (1994). Here, it is worth briefly outlining some of the main findings, focusing on the city specific effects, which are of most relevance to London.

The studies of spatial productivity in manufacturing, particularly in the US, have found that significant regional differences exist in levels of labour productivity. In addition to city specific characteristics the research has pointed to a variety of 'key' measurable factors which underpin these differences. Regional productivity advantages have been found to be associated with variables reflecting the education and age structure of the labour force, the structure of industry, the rate of growth in capital to labour ratios, the effects of infrastructure spending, and the influence of regional policies (Moomaw, 1983a; Williams, Moomaw, 1989; Soroka, 1994; Vagionis, Spence, 1994). The size of manufacturing establishments has also been found to be of importance although not in a consistent fashion. For example, Henderson (1986) and Caralino (1979) found weak negative associations between the size of manufacturing plants and labour productivity, while Soroka (1994) in a study of Canada found positive and significant internal economies of scale.

The influence of agglomeration economies has been a prime focus in much of the research. Shefer (1973) examined the effects of localisation and urbanisation economies on manufacturing productivity for the US Standard Metropolitan Statistical Areas (SMSAs) for the years 1958 and 1963. He showed that localisation economies induced higher productivity in most manufacturing industries found in metropolitan locations, and that the rate of return to urbanisation economies was estimated at 20%. Caralino (1979) used a Dhrymes type production function (see section 7.5) to estimate returns to scale parameters separately for 19 different manufacturing industries in 68 SMSAs for the years 1961 to 1970. He found that internal economies of scale could not account for returns to scale that accrue to urban manufacturing, and that localisation effects were positive and significant in eight of the 19 industries, and urbanisation economies in twelve.

Sveikauskas (1975) and Segal (1976) examined the effects of urbanisation economies alone. Using population as a surrogate for the urbanisation effect, Sveikauskas estimated Hicks-neutral productivity independently within the framework of a CES production function assuming that separate estimates of g and f ([1] above) could be obtained. He found that Hicks-neutral productivity increased by approximately 6% with every doubling of the population of an SMSA. Moomaw (1981b) drew a comparison

between the approach taken by Sveikauskas and that of the Swedish study by Aaberg (1973) and concluded that Sveikauskas estimates were biased upwards. Nonetheless, Moomaw's results did still show an important effect from urbanisation economies with productivity increases of approximately 1.5% with every doubling of the population of an SMSA. Segal (1976), utilising a Cobb-Douglas production function found CRS in manufacturing and estimated that Hicks-Neutral productivity was 8% higher in SMSAs with a population over 2 million in comparison to those with populations ranging from 250,000 to 2 million. Thus, many of the studies undertaken in the 1970s found evidence which suggested that agglomeration effects were important in creating increased productivity advantage in urban manufacturing.

More recent research has also highlighted the effects of agglomeration diseconomies on manufacturing productivity (Caralino, 1985; Moomaw, 1985; 1988; Soroka, 1994). Moomaw (1988) used labour-demand equations to explore the influence of localisation and urbanisation economies on manufacturing productivity in the US SMSAs. His results indicated that in certain manufacturing sectors localisation economies are often offset by urbanisation diseconomies, and that in particular industries, no benefits from external economies were evident. However, the results also showed that urbanisation and particularly localisation effects were still important for a significant proportion of manufacturing industries. Similarly, Soroka (1994), in a study of change in productivity and city size in Canada between 1975 and 1985, found growing diseconomies in a small number of industries from urban population density. In addition, the author's results indicated a weak and declining effect of city population (urbanisation) on productivity over the period studied, even though large cities were still found to exhibit a productivity advantage.

The indication from many of the North American studies seems to be that while urbanisation diseconomies may be evident, they tend to co-exist with localisation and urbanisation economies. Furthermore, recent results from Japan, Greece and Brazil have indicated that particular agglomeration effects are still strong. Nakamura (1985), used a Cobb-Douglas production function to estimate the effects of agglomeration economies across Japanese cities. The author's general conclusions were that light industries benefited most from urbanisation economies, while heavy industries tended to benefit

from localisation economies. In the Greek case, Louri (1988) concluded that urbanisation economies had a significant role in the productivity of manufacturing industry, while studies of Brazil and the US by Henderson (1986; 1988) have shown that localisation economies continue to provide productive advantages for manufacturing industries. The important point is that much of the research into productivity and city size indicates that urban manufacturing may still benefit from agglomeration economies. This represents an extremely important finding, and contrasts with the emphasis placed on urban deindustrialisation in much of the geographical literature reviewed in chapter two.

So far discussion of the relationship between productivity and city size has mainly focused on North American studies, largely because this is where the majority of the research has taken place. Since the present chapter focuses on London it would be useful to consider similar research for British cities. However, the scope of existing spatial productivity research in Britain is limited due to the absence of reliable data at fine spatial levels. No cross sectional studies addressing the issue of productivity and city size have been undertaken, and the spatial econometric studies that do exist are mainly regional analyses (Harris, 1982). The only direct attempt to examine econometrically aspects related to the productivity of cities is by Tooze (1976) who estimated CES functions for the conurbations using a data series from 1968. However, Tooze did not directly examine spatial patterns of productivity, instead the focus of his research was on the relationship between wage differentials in manufacturing and elasticities of factor substitution.

Three other British studies of spatial differences in productivity are of relevance. Fothergill et al. (1984) examined differences in the profitability of manufacturing between the conurbations and other areas of the UK, and found the conurbations to be operating at a lower levels of profitability. Tyler and Rhodes (1986) used conurbation data from 1968 to consider broad differences in labour productivity and found that while the cities had started out with higher productivity than their surrounding hinterlands, this pattern had been reversed for many urban areas by the end of the period. Finally, Tyler, Moore and Rhodes (1988) examined geographical variations in input costs and productivity between urban and non-urban areas in England in the early

1980s. The main findings were that overall input costs tended to be higher in large conurbations than in their surrounding hinterlands and that the conurbations were less attractive in productivity terms than less urbanised areas. On this basis the authors claimed that the "results counter one conventional view that any cost disadvantage in the cities could be more than offset by above average levels of productivity" (Tyler et al., 1988, 123). However, Tyler et al.'s analysis did not include any direct attempts at measuring labour or capital productivity levels for any area, but was based on detailed descriptive evidence of indicators used to reflect only one potential influence on productivity, the characteristics of the labour force.

For Britain and the UK then, spatial productivity research to date has largely been of a descriptive nature and the issue of city size, with respect to localisation and urbanisation economies remains un-examined. This is almost certainly due to the lack of appropriate published data which would allow such analyses. However, recently the CSO have published a variety of economic data at detailed spatial levels which permit attempts to explore aspects of agglomeration and productivity. For the present research, agglomeration economies, and the other spatially differentiated variables described above, may prove important in explaining London's much higher levels of labour productivity in manufacturing and are worthy of consideration.

7.2 A spatial statistical design for the examination of geographical influences on labour productivity.

The discussion of previous spatial productivity research has shown that methodologies exist which provide a useful means of examining the factors underpinning spatial productivity differences. In the context of this thesis there are at least three main reasons for attempting a similar type of analysis. First, is that the issue of agglomeration economies in London manufacturing needs to be addressed and this can only be done by considering London in relation to other areas. Second, the modelling approaches described can take account of, or at least control for, other factor inputs to production, and in this respect provide a more robust theoretical basis than would be possible by simply analysing spatial differences in the ratio of output to labour input. Third, modelling spatial productivity differences in Britain should be useful in pointing to a

variety of explanatory variables which are important in the London case. Thus, the method should provide a way of determining which factors affect spatial differences in productivity and how London compares to other areas of the country, but will also provide an input into further empirical investigations in the following chapter which returns to look at London alone. It is not anticipated that the models will explain definitively why London has higher productivity. It is hoped, however, that they will give at least some indication of factors which are important or not in this respect.

This section presents a statistical design which permits an investigation into spatial differences in the productivity of manufacturing industry in Britain, and specifically sets out to determine how London conforms to any estimated relationships. The purpose is to attempt to isolate the influence of a defined set of factors on spatial productivity differentials. Clearly, an enormous number of factors are potentially important in influencing the aggregate labour productivity of manufacturing industry within any area. In this chapter, as was the case with the productivity research discussed above, only the influence of a small set of directly measurable variables can be examined. Specifically, the focus is on the spatial influences on productivity which may arise from differences in urbanisation and localisation economies or dis-economies, capital to labour ratios, industrial structure, labour skills and the proportion of part time employment, and internal economies of scale as reflected in the average size of industry operating within an area. Other factors such as levels of entrepreneurship, public policy decisions, government investment, even climatic and social factors, may well have important spatial effects on productivity. However for the present, and previous analyses, the fact that these variables are not observable precludes their inclusion in the empirical investigations.

US studies of productivity with similar objectives have been discussed above, where the observations for the models were the SMSAs, which represent individual cities or metropolitan areas. The availability of accurate data at this level has permitted sophisticated analyses in these studies, and allowed detailed comparisons of city productivity to be undertaken. Since the present research is concerned with London, an analysis which examines productivity in relation to other cities holds attraction, not

least because it approaches the comparison of like with like and allows for characteristics such as the size of cities to be explicitly linked to productivity.

However, in Britain relevant data are not available for urban areas. The only detailed spatial disaggregation of data which permits adequate modelling of the type attempted here is at county level, and clearly, the counties of Britain do not correspond to cities. However, if the influence of spatially differentiated variables on levels of productivity are the primary focus of investigations, then it is not necessary that each observation be a city. On the contrary, it is possible to determine whether London, or other urban areas conform to any estimated relationship over non or semi-urban areas, or alternatively whether there is something special about London.

This may be done by introducing a London specific dummy variable into a model based on county observations to determine the extent to which London is over or under-estimated in a relationship which is not city specific. London is a very large city which contains more jobs and people, and more manufacturing firms, output and employment, than any other county of Britain in a relatively small continuous area. The logic of a county based model with a London dummy variable is that these attributes of London make it unique, or at least different to the other counties. As such it may be expected that London would not conform to a general relationship determined over counties. For example, if agglomeration economies do increase with city size and are stronger where industry is concentrated than where it is sparse, then London should not conform to the estimated relationship. Thus, the method does not simply determine the significance of variables at the county level and by extension assume that these factors affect London in the same way, but makes London explicit in the model and considers its under or over-estimation in relation to the county model.

A further justification exists for the use of counties rather than cities. Beeson (1990) argues that focusing solely on cities, rather than including non-urban areas, may in fact be a very limited comparison. This is because while productivity in cities may be increasing with size any group of large cities may be declining relative to the rest of the country. The county model contains a variety of areas, ranging from those which have very little dense urban development, to the metropolitan counties and London. Thus, the

model can be interpreted as containing a less restrictive set of observations within which to consider the uniqueness of London than would be the case with urban observations alone.

A particular note of caution should, however, be stressed about the use of county observations in regression analysis, regarding the issue of spatial autocorrelation (Cliff, Ord, 1973; 1981; Goodchild, 1986; Griffith, 1987). Spatial autocorrelation refers to a situation in which observations for contiguous areas tend to be correlated. In a regression model, where the observations are individual geographical units, spatial inter-dependencies could lead to autocorrelation in the random error term. This type of autocorrelation differs from serial correlation in that the direction of inter-dependency is not uni-directional as with time, but may be multi-directional in space. A similar type of problem is discussed in the econometrics literature regarding interdependencies in cross-sectional models where any one cross-sectional unit may be influenced by the values of other units (Maddala, 1988).

In the published spatial productivity research, issues of spatial autocorrelation have received very little attention. However, as Johnston (1978) notes, most spatial analyses and spatial data in general will be conducted in the presence of autocorrelation and in fact the potential problems posed may not be serious. Johnston (1984) and Cliff and Ord (1981) show that in the presence of an autocorrelated disturbance term inefficient parameter estimates may be obtained, although the estimates themselves will remain unbiased. To quote Griffith (1987) "..estimates of the parameters of geographic distribution remain unbiased, whereas spill-over effects [externalities] introduce bias into the standard errors of these parameter estimates" (Griffith, 1987, 4). Consequently, values of t and F may be overstated in the presence of positive spatial autocorrelation, and understated in the presence of negative (Cliff, Ord, 1981). This is due to potential bias introduced into the estimates of residual variance which appears in the denominator of the F and t test statistics.

Various measures have been proposed which attempt to determine the extent of spatial autocorrelation and models have been developed which incorporate the effects of spatial inter-dependency (Cliff, Ord, 1981). These methods are cumbersome and complex to

undertake and since the following empirical work is predominantly concerned with London alone, rather than attempting to gain an insight into the fundamental dependencies between areas implied by the presence of autocorrelation, they have not been attempted here.

However, it is still recognised that spatial regression models require special consideration. To guard against, and detect, potential problems of spatial autocorrelation in the estimated models two main precautions were taken. First, regional dummy variables were included in the models where it was appropriate to do so differentiating the regional nature of the data. The purpose of these variables was generally to capture region specific effects which are not included in the regression, an example of which may be interdependencies between counties within a region. Maddala (1988) suggests that the inclusion of dummy variables should serve to reduce potential problems of spatial autocorrelation. As a second precaution, the residuals from each model were saved and examined to determine if any consistent spatial patterns could be found. Cliff and Ord (1981) recommend this method citing examples of the types of spatial patterns that may be detected. However, for the present empirical work no consistent spatial patterns were found.

The issue of spatial autocorrelation could conceivably occupy the research of an entire PhD thesis, and thus the measures taken here represent only the first stage. However, as is common with other problems in regression analysis such as multi-collinearity or serial autocorrelation, it is important that attention is paid to the confidence intervals of estimated coefficients and to the residuals from each model. Since various models of different specification have been attempted, and given the precautions taken, it is not anticipated that spatial autocorrelation should radically alter any overall conclusions drawn.

7.3 Specification and measurement of explanatory variables.

The empirical investigations which follow seek to examine the influence of a defined set of variables on labour productivity and to determine how London conforms to the estimated relationships. Previous spatial productivity research described in section 7.1

above, has provided a variety of variables which may be used to explain productivity and which are directly measurable. These are urbanisation economies, localisation economies, capital to labour ratios, internal economies of scale and the structure of industry. In addition, two variables have been constructed to standardise for spatial differences in labour 'quality', one reflecting the proportion of part time employees and the other reflecting and the skills of the labour force. Other variables which are not directly measurable may also influence spatial productivity differentials. For this reason, regional dummy variables were included as independent variables to capture region specific effects where they were found to be appropriate. These effects are thought to include : inter-dependencies between spatial areas, output and raw material prices, climatic differences, differences in the quality and quantity of natural resources, public policy decisions and public investment, differences in the social attitudes of managers and employees, and the like (Moomaw, 1981b). In this way it is hoped at least some of the effects which cannot be quantified will have been controlled for.

It is worth discussing the data used to reflect each of the defined explanatory variables outlined above. Urbanisation economies are fairly straightforward to measure, being proxied in previous analyses of spatial productivity, by either the population or total employment of an area. Experimenting with both these proxies produced almost identical results, and population figures taken from *Regional Trends* are used here.

Localisation economies proved more difficult to model. Many studies have represented this variable with either the total number of manufacturing firms operating in an area, or the number of firms per thousand people in the population. These two proxies were constructed using establishment unit data for manufacturing industry from the CoE (see appendix one). In both cases, it was found that these particular specifications were collinear with other independent variables. After experimentation with different proxies the preferred measurement in the models presented here is establishment density. In fact, it may make more sense to specify this variable in density terms since localisation economies should theoretically be stronger in areas where industry is densely concentrated than where it is sparse. However, simply calculating these density figures over entire counties could be misleading as there are likely to be substantial internal differences in levels of concentration. To increase the degree of measurement accuracy

this variable was constructed from detailed district level data by calculating establishment density within each district, weighting these by the proportion of units in each county within the districts, and then summing the weighted values to produce a county figure. To represent internal economies of scale the average number of employees per establishment was used for each area. This is the standard measure used in the spatial productivity research.

Two labour force standardisation variables were constructed. The first simply recorded the proportion of part-time manufacturing employees in each county from the CoE in an attempt to standardise for differences in worker hours. It is important that this variable is included given that the productivity figures are caluculated on the basis of the number of workers rather than in terms of worker hours. To some extent the part-time employee variable may be indicative of industrial structure or worker skills, however given that these two influences are also included in the model they should be adaquately accounted for within the estimation.The second sought to reflect the skills of the manufacturing labour force. For this variable, many previous analyses have used the proportion of the economically active population who are educated to median level (Soroka, 1994; Sveikauskas, 1973; Moomaw, 1981b). However, it was considered that this particular specification may be too strongly associated with the compositional mix of manufacturing and service industries within an area, and thus, potentially not indicative of the skills of the manufacturing work force. Instead, data were taken from the Census of Population on the occupational structure of residents employed in manufacturing. The specific skill variable constructed recorded the proportion of residents employed in skilled or professional occupations within manufacturing.

The capital stock variable represents a specific problem in the type of empirical analysis conducted here. Gerking (1994) points out that the absence of reliable stock data has provided a consistent source of difficulty for almost all spatial productivity research. Three main methods have been used to get round the capital measurement issue : to avoid the use of this data, to proxy capital, or to estimate capital. The problem posed by the measurement of capital is such that it was the main factor in experimentation before the final choice of models used in this analysis was made. A modification of the proxy used by Aaberg (1973), Soroka (1994) and Moomaw (1983b) was finally included. The reasons behind the choice of the particular

proxy are more appropriately discussed in section 7.4 below which describes various stages in the formulation of the models.

Finally, a variable reflecting the structure of industry has been included. Given that due to data limitations it was not possible to run the models for separate sectors of manufacturing, the structure variable is extremely important. The logic behind this variable is that overall levels of productivity in manufacturing industry will be dependent to a large degree on the structure of industry in each area, such that some counties will contain higher proportions of more productive industries than others. To model this effect, a variable was constructed which measures the expected aggregate level of labour productivity in manufacturing in each area, given the structure of employment and given national sectoral productivity. For each sector of industry at the class level of the SIC, national labour productivity figures were calculated from the CoP. At the county level, these national productivity figures are weighted for each sector of industry by the share of total manufacturing employment in that industry. The weighted figures are then summed to provide an expected figure for each area. The variable should allow for influence of the industrial composition of areas to be isolated.

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The scope of the analysis is limited by the data available to create these variables. As mentioned previously, it is only in recent years that official data of sufficient quality has been published to allow for the estimation of production function models. In addition, many of the variables required, for example the structure variable, require the use of extremely detailed data which is only available for the years in which a census has been undertaken. For these reasons, it has not been possible to attempt time-series analysis, or to run separate models for different sectors of manufacturing industry. The models presented in this chapter relate to aggregate manufacturing across the counties of Britain for the year 1991. There are 66 counties in Britain, although for reasons of data availability and accuracy, the Scottish Island areas were amalgamated and the Isle of Wight and West Glamorgan counties excluded, leaving 61 county observations.

7.4 Models used and estimation techniques.

Two separate models were finally used to examine factors underlying spatial differences in the productivity of manufacturing. Both models used logarithmic transformations as is common in most spatial productivity research for reasons of convenience in the estimation of production function parameters. The validity of this functional form was verified by means of a RESET test conducted to determine if the log-linear estimating form of each model was mis-specified and the null hypothesis of

correct functional form could not be rejected (Stewart, 1991).[2] Both models have been estimated by Ordinary Least Squares (OLS).

The models presented in this chapter are within the framework of the production function approach described in section 7.2 above. As mentioned previously, one of the main problems encountered in spatial productivity research is the absence of reliable capital stock data required for the estimation of certain production functions. For the models presented here, data did not permit the estimation of reliable capital stock data and so of the three options discussed by Gerking (1994) it was only the avoidance or proxy of capital that was feasible. As will be demonstrated, it is due to this data limitation that the distinction between marginal and average labour productivity, introduced in chapter six, must be drawn in the discussion that follows.

It was first thought that following the method of Sveikauskas (1975) and Astrakianaki (1995) the need for capital data could be eliminated from the production function. This could be done by assuming that each area faces an identical production function, specified in CES form such as in [3] above, but that the efficiency parameter of the function is Hicks-Neutral and varies by area. In this way Sveikauskas argued that separate estimates of g and f from [1] above could be obtained. Since g is not observable, Sveikauskas proceeded by substituting a measure of labour productivity, value added per unit of labour. In essence, the Sveikauskas approach simply leaves a multiple regression which relates average manufacturing labour productivity to a variety of explanatory variables thought to enter the production function under the Hicks-Neutral efficiency parameter.

[2] The RESET test is a general procedure, designed primarily to detect the choice of an inappropriate functional form. Stewart (1991) points out that if the wrong functional form is adopted the square of one or more of the regressors might be expected to improve the explanatory power of the model. The RESET test uses the square of the predicted values as an additional regressor. If the estimated coefficient on the square of the predicted values is statistically significant the estimated equation is mis-specified (Stewart, 1991, 71-72). For the models defined in [8] and [11] the coefficients on the squares of the predicted values, with t-statistics, were 0.18 (0.70), and -0.72 (-0.5) respectively, both of which are not statistically significant. These results indicate that the log linear estimating form has not been mis-specified.

The estimating equation used for the first model was :

$$\ln (V/L) = \ln\alpha + \beta_1 \ln URB + \beta_2 \ln LOC + \beta_3 \ln SIZE + \beta_4 \ln SKILL + \beta_5 \ln PART + \beta_6 \ln STRUCT + \beta_7 \ln DLON + \beta_8 \ln D1 \ .... + \beta_{16} + \mu , \quad [4]$$

where *V/L* is value added per employee, *URB* is the urbanisation variable, *LOC* the localisation variable, *SKILL* the skills base of the manufacturing workforce, *PART* the proportion of part-time manufacturing employees, *STRUCT* the structure of industry, *DLON* a dummy variable for London, *D1* to *D9* a set of regional dummy variables for the regions of Britain and μ a random error term. The inclusion of the regional dummy fixed effects was verified by conducting an *F*-test between the restricted and unrestricted models.[3] This test calculated an F-statistic of 2.65 significant at the 0.05 level providing evidence of the need to differentiate the regional nature of the data. No multicollinearity or extreme outlier problems were detected.

model. Aaberg (1973), Soroka (1994) and Moomaw (1983b; 1995) proxied capital intensity per worker by calculating value added less payroll per production worker. Although these authors do not specifically mention Euler's theorem, it is upon this logic that the proxy is essentially based. Euler theorem is discussed in Chiang (1984), Birchenall and Grout (1984) and Bowers and Baird (1971). For the purposes of this thesis, it is sufficient to note that for a linearly homogenous function such as $Q = f(K,L)$ the partial derivatives of Q with respect to K and L are the marginal products of capital and labour respectively.

[3] *F*-tests between the restricted and unrestricted models are calculated using the following formula (Màtyàs, Sevestre, 1992) :

$$F = \frac{(RSS_R - RSS_U) / (m-k)}{RSS_U / (n-m-1)}$$

where RSS_R and RSS_U are the residual sum of squares of the restricted and unrestricted models respectively, k is the number of explanatory variables in the restricted model, m the number of explanatory variables in the unrestricted model, and n the total number of observations. Dougherty (1992) shows that *F* statistic may be expressed verbally as :

$$F = \frac{\text{Improvement in fit / Extra degrees of freedom used up}}{\text{Residual sum of squares remaining / Degrees of freedom remaining}}$$

Euler's theorem suggests that the value of Q of a linearly homogenous function can be broken down into two additive components - the total payment to capital and the total payment to labour :

$$Q = K\frac{\partial Q}{\partial K} + L\frac{\partial Q}{\partial L}. \qquad [5]$$

The theorem assumes that under conditions of CRS, and within the confines of perfect competition, if each factor input is paid the amount of its marginal product, the total value of output (Q) will be exactly the same as the sum of each factor's marginal product times the quantity of that factor employed. Under the assumption that the wage rate is equal to the marginal product of labour, then subtracting total payroll from value added should, according to [5] above, leave a measure of the payment to capital.[4]

With this additional variable a production function was specified in Cobb-Douglas form. Applying the condition of CRS leads to the following linearly homogenous relationship :

$$Q = AK^{\alpha}L^{1-\alpha}, \qquad [6]$$

and allows for the division of both sides of the equation by L yielding :

$$\frac{Q}{L} = A\left(\frac{K}{L}\right)^{\alpha}. \qquad [7]$$

Since A is assumed to be Hicks-Neutral and influenced by the same variables as in [4] above the estimating equation for this model, shown in [8] below, was identical to [4] except that a variable reflecting payment to capital per employee (CAP) is included.

[4] That the wage rate is equivalent to the marginal product of labour derives from the marginal productivity theory of distribution. (Layard, Walters, 1978) The proposition is that under conditions of perfectly competitive equilibrium the profit maximising firm will hire labour to the point where the marginal productivity of labour equals the wage rate. Indeed, the theory holds for any factor input such that it will be hired to the point where its marginal productivity equals what must be paid for it. Much use has been made of the non-labour cost capital intensity proxy in the urban productivity literature because of the absence of reliable capital data (see for example Caralino, 1979; 1985; Shefer, 1973; Sveikauskas, 1975; Moomaw, 1981; Soroka, 1994). The main assumption underlying this proxy is that the rate of return to capital is the same in all geographical locations. Moomaw (1983b) contends that this is not an onerous assumption, and found that estimates based on the non-labour cost proxy to be superior to those based on the perpetual inventory measure of capital stock.

The difference between the two models is that in [7] a full production function is estimated, rather than simply trying to capture effects on the efficiency parameter as in [4].

$$\ln (V/L) = \ln\alpha + \beta_1 \ln URB + \beta_2 \ln LOC + \beta_3 \ln SIZE + \beta_4 \ln SKILL + \beta_5 \ln PART + \beta_6 \ln STRUCT + \beta_7 \ln CAP + \beta_8 \ln DLON + \beta_9 \ln D1 \ .... + \beta_{17} \ln D9 + \mu , \qquad [8]$$

Again an F-test verified the inclusion of fixed effects variables. In this case an *F*-statistic of 7.06 was calculated significant at the 0.01 level. As with the previous model, no multicollinearity or extreme outlier problems were detected.

Clearly, the critical assumption implicit in the measure of capital used is that the rate of return to capital is constant across space and this may not in fact be the case in a real world economy. The capital intensity variable may therefore be a rather crude proxy, however, in the absence of more reliable data it is the best option available. Obtaining separate estimates from [4] and [8] above it was found that the inclusion of the capital to labour ratio proxy variable in the Cobb-Douglas estimation substantially improved upon the explanatory power of the first model, and also appeared to have produced results which were more theoretically robust. In addition, the estimates obtained were generally found to have lower standard errors and higher *t*-statistics than those obtained by the Sveikauskas method. Conducting an *F*-test between [4] and [8] produced an *F*-statistic of 68.2 significant at the 0.01 level, showing that the improvement in fit by including the capital variable was significant, and thus, that this variable should be included in the model. The effects of omitting a relevant variable are discussed in the literature and can create serious econometric difficulties (Judge et al., 1988; Stewart, 1991; Maddala, 1988). In short, it leads to biased estimates because variables in this restricted model tend to have dual effects. One the one hand the estimates represented the direct effects of each variable on the dependent variable, on the other they represent the effects of the omitted variable as the restricted model variables may be acting as proxies. Thus, the estimates obtained under the Sveikauskas method are likely to be biased since they may have been reflecting effects induced in the production function both under the efficiency parameter and due to the capital to labour ratio, and the two cannot be separated. The indication is that Moomaw (1981a, 1981b) is correct in arguing that Sveikauskas' method of obtaining separate estimate of *g* in [1] above is

unsatisfactory. However, the important point is that the estimates obtained in this way had to be rejected and the Cobb-Douglas estimation with capital to labour ratio proxy was used instead.

Having decided to use one model with a proxy for capital intensity per employee and under the assumption of CRS, it was thought important to search for another model which would further explore productivity and provide a check on the results obtained. For this purpose an additional production function was specified which is often used in spatial productivity research precisely because it avoids the need for capital data and the returns to scale parameter is free to vary (Shefer, 1973). Dhrymes (1965) set out to test some of the assumptions implicit in the CES class of production function. For this purpose he developed a generalisation of the CES production function which may be written as :

$$Q = f(K,L) = L^h F\left(\frac{K}{L}\right) = c\left[\alpha_1 K^{h\delta} + \alpha_2 L^{h\delta}\right]^{1/\delta}, \qquad [9]$$

where c is an efficiency parameter, α_i's are the distribution parameters, h the homogeneity parameter, and δ the substitution parameters. Differentiating with respect to labour and employing the condition for labour market equilibrium, such that the marginal product of labour is equivalent to the wage rate, leads to the Cobb-Douglas type relationship :

$$W = AQ^{\beta} L^{\gamma} . \qquad [10]$$

The Dhrymes function simply states that the incremental increase in output which arises through the addition of one unit of labour, is a function both of the level of output and the level of labour, as well as of other variables which enter the production function under the efficiency parameter A. Since data on wage rates are available for each county in Britain for the year 1991 [10] above can be easily estimated by OLS. The Dhrymes model is extremely useful because it avoids the need for capital data and also provides another dimension to the productivity analysis in considering marginal as well as average labour productivity, allowing for the determination of the components that affect the wage rate. However, it is particularly helpful because it does not assume constant return to scale and thus provides a check on the assumption of the Cobb-Douglas estimation.

Indeed. Dhrymes has shown that from [10] above the homogeneity parameter h of equation [9] may be estimated as :

$$h = \frac{1+\gamma}{1-\beta} \qquad [11]$$

The estimation of this parameter is very important because it provides a direct indication about the relationship between wages, and output and labour. In the spatial productivity research, the estimate of h has been interpreted as a direct measure of the returns to scale from factor inputs (Caralino, 1979; 1985; Shefer, 1973). In the case where $\gamma = -\beta$ [9] above would be homogenous of degree one, and would therefore be equivalent to the standard CES production function [3] which displays CRS.

In these respects, the Dhrymes model provides a useful means of verifying some of the assumptions implicit in the results of the Cobb-Douglas estimation. The estimating equation for the Dhrymes production function was :

$$\ln W = \ln\alpha + \beta_1 \ln GVA + \beta_2 \ln LAB + \beta_3 \ln URB + \beta_4 \ln LOC + \beta_5 \ln STRUCT + \beta_6 \ln SKILL + \beta_7 \ln PART + \beta_8 \ln SIZE + \beta_9 \ln DLON + \mu. \qquad [12]$$

where in addition to the variables already defined, W is the average wage rate, GVA is gross value added, and LAB is labour input. Interestingly, the F-test for regional dummies provided no evidence for the inclusion of these fixed effects and so the restricted model had to be accepted. No evidence of problems arising from multicollinearity or extreme outlier values were detected.

Thus, the results of two separate models were finally chosen, one examining average productivity within the framework of the Cobb-Douglas production function, and the other exploring marginal productivity within the Dhrymes production function.

7.5 The results.

In the following section the results derived from the two models described above are presented. The discussion focuses on the defined set of explanatory variables and the London dummy variable. The regional dummy variables are less relevant to the

objectives of this chapter and are not discussed below. This section simply presents the county results. Their relevance with respect to London is discussed in section 7.7.

The results of the Cobb-Douglas estimation ([8] above) are shown in table 7.1 below.

Table 7.1 : Estimated regression results using the Cobb-Douglas production function.

Number of observations = 61

$R^2 = 0.94$ $F = 45.24$ Sig $F = 0.0000$

variable	coefficient	standard error	t-ratio
constant[5]	-0.834	0.331	-2.516**
CAP	0.398	0.022	18.106***
URB	-0.018	0.015	-1.231
LOCE	0.006	0.008	0.713
SIZE	0.039	0.031	1.252
SKILL	0.192	0.100	1.914*
PART	-0.098	0.036	-2.765***
STRUCT	0.459	0.102	4.249***
DLON	0.042	0.048	0.864

(*** - t significant at 0.01, ** - t significant at 0.05, * - t significant at 0.1)

The explanatory power of this first model is high as shown by the R^2 value of 0.94 and the F statistic shows that this value has not arisen by chance. For most coefficients, the associated standard errors are low indicating fairly precise estimates.

The capital intensity per employee proxy (CAP), which is the only variable that is not thought to enter the production function under the efficiency parameter, behaves as theory predicts. The estimated coefficient on this variable verifies that counties tend to have higher labour productivity in manufacturing if more capital is employed in relation to labour. In fact the model predicts that the level of capital has an extremely important

[5] Since the regression is specified in log-linear form, the constant is actually an estimate of ln$a$, and thus to obtain a, the anti-log must be calculated. Strictly speaking the constant represents the value of the dependent variables when the independent variables are equal to zero. Dougherty (1992) points out that in the estimation of an economic function such as [7] above, although the constant represents a multiplicative factor it has no straightforward interpretation. Its function is simply to help predict values of the dependent variables given values of the independent variables.

effect on aggregate levels of labour productivity in manufacturing. Specifically, the estimated elasticity suggests that a 1% increase in the capital to labour ratio leads to a 0.4% increase in labour productivity. The standard error on this variable is small, and thus the estimated beta coefficient can be assumed to be fairly robust, within the confidence range (0.420, 0.376) at the 0.01 level.

Interestingly, the model does not determine returns to scale from either urbanisation economies (*URB*) or localisation economies (*LOCE*) and labour productivity in county manufacturing. Indeed statistically insignificant estimates were obtained for both variables. In fact the results suggest that urbanisation diseconomies may exist, although the estimated coefficient of -0.018 is extremely small, indicating only that a 10% increase in the population of a county would correspond with a -0.2% decline in aggregate labour productivity. The standard error associated with this estimate is relatively large rendering its accurate interpretation invalid. This is also true of the localisation estimate. In sum, the model has not detected significant influences from these external effects, and these results are consistent with the types of conclusions reached in most of the geographical literature, and indeed with some of the urban productivity literature (Caralino, 1985; Moomaw, 1985; 1988; Soroka, 1994).

Two variables have the clearest statistically significant influence upon the efficiency parameter, the variable reflecting the proportion of part-time manufacturing employees (*PART*) and the variable that reflects the structure of industry (*STRUCT*). The proportion of part-time manufacturing employees has a significant negative influence on levels of productivity although the estimated beta coefficient is quite small. The model indicates that a 10% increase in the proportion of part-time manufacturing employees across the counties would lead to a decrease of under 1% in labour productivity. However, the result is theoretically satisfactory because the level of output per employee should be smaller in areas where more part-time jobs existed. It should be stressed that this expectation is not an indication that part-time employment is less 'productive', but simply arises from the fact that the aggregate productivity figures are calculated on the basis of all employees.

The second important influence on the efficiency parameter arises through the structure of industry (*STRUCT*). The model predicts that the structure of industry in each area is strongly positively associated with the overall level of labour productivity. Due to the way in which the variable has been constructed it is not immediately obvious how it should be interpreted. However, what the beta coefficient essentially means is that if the industrial structure of an area was to change such that it created a 10% increase in its expected level of labour productivity given national productivity, actual labour productivity would increase by just under 5%. The standard error associated with this variable is 0.102, again suggesting a precise estimate. The industrial composition of a county is clearly important in influencing its overall level of manufacturing labour productivity, and furthermore, the sign on the coefficient is theoretically acceptable, as areas which contained a higher proportion of industries which are nationally more productive would be expected to have higher levels of labour productivity.

The internal economies of scale (*SIZE*) and labour force skills variables (*SKILL*) are both positively associated with labour productivity, however, the estimated coefficients were not statistically significant at an acceptable level. As regards workforce skills, the standard error does indicate a fair degree of certainty that the skills of the labour force are positively associated with labour productivity and that the estimate lies within the range of 0.09 to 0.29. Given that the data used to create this proxy were resident rather than workplace based, it may be that the model could not determine statistical significance due to implicit measurement error rather than being indicative of an economic reality.

The final result shown in table 7.1, and the one of most interest in this thesis, relates to the London dummy variable that was included in the model (*DLON*). The estimated coefficient for this variable indicates that while relationships determined over the counties have underestimated London's manufacturing productivity they have not done so to a large extent, or indeed, to an acceptable degree of statistical significance. In contrast to expectations, London does conform to the county relationships determined. This is an extremely important result, showing that after allowing for the capital to labour ratio and the defined set of variables which affect the efficiency parameter of the production function, productivity is not significantly higher in London than in the rest

of the country. The suggestion is, that the factors which can explain productivity differences across the counties of Britain also provide an adequate explanation for the high level of productivity in London.

In sum, this model provides some interesting results. First, it would seem that agglomeration economies, both urbanisation and localisation, have not been identified for manufacturing industry across the counties of Britain. Second, it would seem that the industrial composition and the ratio of labour to capital within any area are of critical important in creating spatial productivity differentials. It is not clear that the internal economies of scale or the skills of the workforce have any significant influences on labour productivity. Finally, it would seem that London has been underestimated in the general county relationships, but that the degree of underestimation is not significant. In other words, London does not appear to be quite so radically different in the labour productivity relationships which have been tested.

The results obtained through the estimation of the Dhrymes production function are shown in table 7.2 below.

Table 7.2 : Estimated regression results of the Dhrymes production function.

Number of observations = 61

$R^2 = 0.68$ $F = 13.900$ Sig $F = 0.0000$

variable	coefficient	standard error	t-ratio
constant	8.666	0.785	11.040***
GVA	0.263	0.071	3.709***
LAB	-0.251	0.082	-3.048***
URB	0.048	0.015	3.113***
LOCE	-0.007	0.011	-0.675
SIZE	0.042	0.041	0.909
STRUCT	0.563	0.173	3.246***
SKILLS	0.404	0.119	3.373***
PART	-0.114	0.044	-2.587***
DLON	0.037	0.069	0.535

(*** - t significant at 0.01, ** - t significant at 0.05, * - t significant at 0.1)

The explanatory power of the model is high, with an R^2 value of 0.68 and an *F*-statistic of 13.9. Some very interesting results emerge from the model. First, it be can be seen that the estimated elasticities of labour and gross value added with respect to wages are of almost identical magnitude but of opposite sign. The model determines that a 10% increase in labour employed would lead to a -2.5% decrease in wages, while a 10% increase in value added would create a 2.6% rise in wages. For both elasticities the *t*-statistic is significant at the 0.01 level. Thus, using [11] above the homogeneity parameter of the function is so close to 1.0 that under the interpretation suggested by Dhrymes, and used in spatial productivity research, it would seem manufacturing across the counties of Britain displays CRS with respect to factor inputs. In this respect, it would seem that the assumption of CRS required for the Cobb-Douglas estimation was not overly restrictive. In addition, Dhrymes points out that a production function such as [9] above "will lead to a Cobb-Douglas type relationship between wages, output, and labour which is not homogenous of degree zero in output and labour except in the linearly homogenous case" (Dhrymes, 1965, 362). The elasticities estimated approximate a linearly homogenous case, and thus, the function is homogenous of degree zero in output and labour. This means, as one would expect, that a proportional change in the levels of output and labour employed will not affect the marginal productivity of labour.

Of the explanatory variables which are thought to enter under the efficiency parameter *A*, four appear to have a statistically significant influence. In contrast to the Cobb-Douglas estimation the model suggests that the population of the counties has a significant influence on the average wage rate, such that a 10% increase in population will tend on the whole to have a 0.4% increase in the wage level. This is an interesting result because it indicates that wages will differ dependent on the size of any county, and this is consistent with previous research which has found much higher wages in urban areas (Fuchs, 1967; Quinn, McCormick, 1981) and clearly has implications for the London conurbation.

As with the results presented in table 7.1, the Dhrymes model indicates that structure of industry, the skills of the workforce, and the proportion of part time employees are clearly important in determining the marginal product of labour. For industrial

composition, the estimate indicates that counties in which industries are concentrated which are nationally very productive tend on the whole to have higher aggregate wages in manufacturing. It was found that the skills of the workforce are strongly and significantly correlated with the average wage as would intuitively be expected. The model suggests that a 10% increase in the proportion of skilled and professional manufacturing employees in the counties of Britain leads to a 4% increase in the marginal productivity of labour. The proportion of part-time manufacturing employees has a significant negative influence on the wage rate. Counties with more part-time employees have lower average wage rates in manufacturing, and the estimated coefficient suggest that an increase of 1% in the proportion of part-time employees would lead to 0.11% decline in the average wage rate.

None of the remaining variables were found to have a statistically significant relationship with marginal labour productivity and the standard errors associated with these estimates are sufficiently large to negate interpretation. However, again it can be seen that London has been underestimated in this model, but it is not a substantial underestimation, nor is it statistically significant. The implication of this is that the aggregate wage rate in manufacturing in London is adequately explained by the levels of output and labour employed as well as by the skills of the workforce, the population of London, and the structure of industry within the capital.

7.6 Discussion.

This chapter set out to examine the influence of a defined set of variables on spatial differences in manufacturing labour productivity and how London fits within relationships estimated over the counties of Britain. The empirical investigations have provided nothing more than a general indication of how a variety of factors may influence spatial levels of average and marginal labour productivity in manufacturing. Given that the spatial observations in the model were not optimal, that some variables were proxies, and that many effects on spatial productivity could not be measured, nothing more can be expected. Nonetheless, the models have produced some important findings. The following section considers what the results obtained actually mean for the analysis of London's labour productivity.

The most important aspect of the results for this thesis are those related to the London dummy variable. The previous chapter has shown that aggregate manufacturing in London now operates at a considerably higher level of average labour productivity than in the nation as a whole. Yet the results of this chapter have shown that London does conform to the relationships estimated over the counties and contrary to what may have been expected, London does not appear to be operating in particularly unique circumstances. It cannot be assumed from the results of the models that the London dummy variable beta coefficient is any different than zero, although the direction of the sign on the coefficient did indicate that London was being under-estimated. Thus, the strict conclusion must be that the models explain London's productivity as much as any other area and it must therefore be assumed, as with the other counties, that the results presented above are relevant to London. It is worth considering the main implications of the results for London.

The first interesting aspect of the results is that positive agglomeration economies are not related to higher levels of average labour productivity in manufacturing across the counties of Britain. In fact, the results presented in table 7.1 above suggest that urbanisation dis-economies may be evident in manufacturing industry leading to the conclusion that counties with larger populations tend on the whole to have lower labour productivity in manufacturing. The implication is that London does not enjoy higher labour productivity because of external agglomeration economy effects as traditionally defined. This result may seem surprising, however, it can be verified by closer examination of conurbation data shown in table 7.3 below.

Table 7.3 : Relative labour productivity in London and the British conurbations in 1991.

UK=100

	relative labour productivity
London	119
Tyne and Wear	101
West Midlands	84
Greater Manchester	95
Merseyside	97
West Yorkshire	85
South Yorkshire	81

Source : CSO (1994) Regional Trends. London. HMSO

It can be seen of the seven metropolitan counties in England, only London and Tyne and Wear have higher value added per employee than the nation as a whole. In fact, the West Midlands, West Yorkshire and South Yorkshire are significantly below the national level. The relationship suggests that explanations for London's high levels of average labour productivity should not be sought in traditional concepts of agglomeration economies because it is not simply because of the fact that London is a big city that manufacturing is highly productive.

Of the variables that were thought to enter the production functions under the efficiency parameter *A*, three were found to have a statistically significant influence. First, is the variable reflecting the proportion of part-time manufacturing employees, although the estimated coefficient associated with this variable suggests that it actually has a very small influence on levels of average labour productivity. In fact this variable does not provide a good explanation for the London case as the data reveal that that while 7.74% of manufacturing jobs in London were part time in 1991, this has to be compared to a mean figure of 7.34% for all counties. As mentioned in chapter three, the proportion of part-time employees in London has not differed significantly from the nation as a whole over the 1981 to 1991 period. However, the importance of this variable should still be borne in mind particularly in relation to individual manufacturing sectors examined in the next chapter. The two most relevant variables for London that enter under *A* appear

to be the skills of the labour force and the structure of industry in which London does have significantly higher values than the county average in both respects, and these characteristics of industry are worthy of further attention.

However, perhaps the most critical factor in differentiating average labour productivity in the counties was the capital to labour proxy variable and this would appear to be highly relevant to London. The indication from the Cobb-Douglas estimation is that in addition to influences arising from the structure of industry and the skills of the labour force, it is factors internal to production that can explain London's high average labour productivity, rather than any agglomeration or specific London location effects. This chapter has demonstrated that capital data is extremely difficult to obtain, and this places important limitations on the extent to which this finding can be pursued. However, data from *Regional Trends* do show that in 1981 capital expenditure per employee in London's manufacturing sector indexed to the UK(=100) was 88.6 but that by 1991 this had increased to 129.4. Graham and Spence (forthcoming a) have shown that while expenditure in capital in manufacturing in Britain has increased by 35% over the decade, London's capital expenditure grew by 44%. Clearly, capital expenditure is not equivalent to the payment to capital but it would seem that London's manufacturing has over the 1980s invested in much more capital relative to the number of employees than in the nation as a whole, and this may have had two important and entirely related effects. First, substitution into capital would result in reduced labour demands, and second, a reduction in the number of employees required in manufacturing would raise the marginal productivity of labour and thus the wage rate.

However, the direction of causality is not clear and it may in fact be that high London wages have induced substitution into capital. The ratio of capital intensity to labour in London is extreme relative to the county average, and appears to provide a good explanation for London's much higher average productivity such that the London dummy variable is no longer relevant. To obtain the measurement of payment to capital, total payroll is simply subtracted from value added as suggested by Euler's theorem. The estimate of payment to capital for London achieved in this way does not form a significantly higher proportion of total value added than the average for all counties. In London the payment to capital is 42% of total value added, and in the nation the

proportion is 40%. It is only when the payment to capital proxy is divided by the number of employees that London appears very different than the nation because it yields a much higher ratio.

Thus, the related effect of high capital intensity is that London's manufacturing actually employs so few people and is characterised by substantially higher wages than in the nation as a whole. The fact that the estimate of payment to capital for London does not differ from the nation as a whole implies that total labour costs are also not so different. This is in fact the case. The point is that London may not employ many people in manufacturing but it pays employees such significantly higher wages that the actual cost of labour input in manufacturing is not so much smaller. This can be demonstrated by considering the relative unit labour cost of producing a manufactured good in the capital.[6] Data from *Regional Trends* show that relative to the UK, and where the national figures equal 100, London's manufacturing value added per employee was 119 and its average wage in manufacturing was 116. Dividing the wage rate by the average productivity to calculate the relative unit cost of labour yields the figure 0.98. Thus, the actual difference between London and the nation is greatly, though not absolutely, reduced, and although London's manufacturing employs fewer people the cost of employing those few is also much higher than it would be nationally.

In essence, these findings indicate that higher average productivity in the capital does not imply that external effects from a London location will induce higher levels of output in all manufacturing industries. It seems instead, that London's labour productivity may be explained by higher waged and higher capital intensity industries and by the structure and skills base of industries within. In this respect London may not be a much more 'efficient' location for producing manufactured goods in general terms, but rather the structure of London's industry is disproportionally characterised by high skills, high capital intensity and high wages.

[6] The relative unit labour cost is defined as the ratio of unit labour cost in the region over unit labour cost in the nation. It is often used as a measure of regional competitiveness, identifying the relative importance of changes in wages and productivity. For region *r* it is calculated as :

$$\text{Relative unit cost of labour in } r = \frac{[\text{wage in region } r \,/\, \text{wage in the nation}]}{[\text{labour productivity in region } r \,/\, \text{labour productivity in the nation}]}$$

This leads to the related question of why wages, and thus the marginal product of labour, are higher in London than in the nation as a whole. In addition to effects arising from capital intensity, the estimation of the Dhrymes model has suggested a number of important factors in this respect. It would seem that there is an association between the wage rate and the level of population within a county. This result need not be indicative of agglomeration external effects. Fuchs (1967) and Quinn and McCormick (1981) have shown that that factors such as congestion, the costs of living, and population density, often result in higher wage rates in urban areas. Hence, the urbanisation effect may well indicate that supply side factors in the labour market are raising wages higher than would be expected given the relationship with levels of output and labour, and indeed the absence of urbanisation effects in average productivity suggests that this is likely to be the case. As regards London, the association between the level of population and the wage rate may imply that wages are 'artificially' high in manufacturing because of the size of the city, and may have been an important influence on the rate of substitution into capital.

However, also critical is that wages are strongly associated with both the skills of the workforce and the structure of industry. Bringing together results of both models, the indication for London may be that it is structural differences in the nature of manufacturing that underpin its higher productivity. In terms of change over the 1980s, it may be that the structural composition of London industry has changed such that higher skilled and less labour intensive industries increasingly employ less people but provide jobs that are highly paid and highly skilled. This would explain why payment to capital per employee in London is now so much higher in London and why skills and structure are so critical. More importantly, it may yield an insight into why London's employment change has been so severe without a corresponding scale of output decline. The important point is that consideration may need to focus upon how comparative advantages from a London location may arise for some sectors of industry, and how this has influenced the change in the average productivity of labour. In other words, the increase in London's average labour productivity may in reality be a function of manufacturing decline created through the selective closure or out-migration of particular sectors of industry which cannot offset the higher costs of locating in London with the increased marginal productivity of labour.

This chapter has explored spatial differences in labour productivity for only one year. In order to determine how productivity has impacted upon labour demand in London's manufacturing it is necessary to consider productivity change over time. Many of the findings above, particularly in relation to capital to labour ratios and the skills of the manufacturing labour force, cannot be examined in this way due to the absence of appropriate data. However, one important issue raised by this analysis that can be addressed, is how the structure of London's industry is actually changing and what this has meant for average labour productivity and labour demand. This is a crucial issue because any of the variables found to be important in influencing spatial productivity could be geographically differentiated simply due to a particular compositional mix of industry. Analysis of change in the structure and nature of London's manufacturing activities is not an easy task. It has been shown earlier in this thesis that employment data tend to indicate little variation in rates of decline between detailed sectors of the SIC. However, for the purposes of this thesis the CSO have provided unpublished GDP data for London manufacturing industry disaggregated at the section level of the 1992 SIC, and this allows for the examination of structural changes in manufacturing over time from a productivity perspective. Furthermore, with the use of wage data inference can be made about the types of industries that now exist in London that is not possible by looking at employment alone. It is to these issues that the next chapter turns.

7.7 Conclusions.

This chapter set out to examine the influence of a defined set of variables on spatial differences in labour productivity in manufacturing and sought to consider how London conformed to any estimated relationships. The models presented have important limitations. It would have been preferable if data had been available to estimate the relationships over areas that were not simply defined by administrative boundaries, and for different sectors of manufacturing industry. However, the models have been useful in generating conclusions about London's manufacturing productivity particularly in two related respects. First, the use of the production function framework has provided a much more robust theoretical and empirical analysis of productivity than could be achieved by using simple comparisons of average labour productivity across areas. It

has allowed for the influence of a variety of factors to be tested and has shown how the 'illusion' of London's higher average productivity may be better understood within a framework which takes into account the influence of capital intensity as well as external effects. Second, the models have shown that what counts in the London case is not the total output produced by the number of units of labour but the amount these units are actually paid. Paradoxically, the models determine no specific London effect, but when the variables are considered in terms of what they actually mean for London, the indication is that it may be the changing structure and nature of manufacturing in the capital that is likely to provide the answer to why average productivity has grown at such a fast rate and employment declined so severely.

Chapter 8 : Structure, specialisation and productivity led employment decline.

8.0 Introduction.

Chapter seven has shown that the high level of labour productivity in London's manufacturing sector is not necessarily indicative of greater locational 'efficiency' in production. The results of the models indicate that agglomeration economies are difficult to identify in manufacturing across the counties of Britain, and that when average labour productivity is examined within a framework which controls for returns to capital, the main implication for London industry is that while it may produce more output per unit of labour, it is not so different from the nation in terms of output produced relative to the cost of labour input. London's manufacturing simply faces much higher labour costs than other areas of Britain and it is highly likely that this is a crucial factor in explaining why London's industry employs so few people. However, the fact that labour costs are higher in the capital in turn means that the marginal product of labour is higher, and the analysis presented in chapter seven suggests that this may have much to do with the nature of manufacturing in London.

The present chapter turns to explore change in the compositional mix of industry and labour productivity growth in London, identifying some characteristics of the type of manufacturing that now exists in the capital. It would be extremely useful here to conduct a detailed analysis of the influence of wages on London's manufacturing change, particularly in relation to the numbers of people employed. However, as shown below, the wage and earnings data available at the urban level are not of sufficient quality to allow such an analysis. The chapter draws upon the wage data that do exist to demonstrate the potential importance of labour costs in London, however, the majority of the analysis utilises unpublished GDP data which disaggregates London manufacturing, to consider how compositional change has affected London's average productivity. The chapter is divided into two parts. Part one examines how structure and specialisation have influenced average labour productivity in London using methods developed in the spatial productivity literature to categorise the data in order to answer some basic questions concerning the role

of structural change in productivity growth and employment loss. Part two, develops a method for quantifying and evaluating the employment consequences of productivity growth and presents results for London.

It should be stressed here, that it is out of necessity and not choice, that this chapter returns to focus on average labour productivity rather than capital or wage related issues. At the level of industrial disaggregation required, it is simply not possible to explore these dimensions to a sufficient degree of accuracy. Thus, while considering the results presented here, the conclusions of chapter seven have to be borne in mind, and these are that productive efficiency does not appear to arise simply from a London location, but that it seems likely that the structure of manufacturing in the capital is disproportionately characterised by high wage, high skill, and high capital intensive industries.

8.1. Sources of data.

The data sources used in this chapter are described in appendix one. The wage data are from two sources. Average hourly earnings in London by manufacturing sector are taken from the New Earnings Survey (NES) which is a sample survey of the earnings of employees in employment carried out in April of each year by the DE, and national wage rates in manufacturing at the class level of the 1980 SIC have been taken from the CoP.

GDP and employment data for manufacturing industries are also used in this chapter. The GDP data, which have not previously been published, have been provided by the CSO. These data provide a breakdown of manufacturing GDP at factor cost at the section level of the 1992 SIC for London for the years 1984 to 1991. To estimate real GDP at constant prices the national implied price deflator of GDP in constant 1990 prices was applied to the London figures. In addition to issues discussed in appendix one a point worth mentioning is that the deflator is for all industries since at present the CSO does not disaggregate deflators by industry. Staff at the CSO who are currently working on the production of an industrially disaggregated deflator have advised that, with the exception of the oil industry, differences in deflation by industry are likely to be marginal particularly when using data

aggregated at the section level of the SIC. In the case of the solid fuels and oil industry the CSO have cautioned that the oil crisis of 1985 created such price changes in the late 1980s that the use of a general industrial deflator would most likely produce inaccurate results. This industry has therefore been excluded from the following analysis of manufacturing productivity.

To allow compatibility with GDP data, employment data were required under the 1992 SIC. Although the 1995 Census data is now officially produced under this new classification the DE have decided not to reclassify data before 1991. However, certain commercial organisations have been permitted to do so by the DE and have been provided with extremely detailed data and help in producing a consistent set of time series data. One of these organisations is Business Strategies London Ltd., who were generous in allowing full access to their regional employment data sets from 1984 to 1994 which are disaggregated under the 1992 SIC.

Part I : Structure and specialisation in wages and labour productivity in London manufacturing.

8.1.1 Wages and the structural characteristics of change in London's manufacturing 1984 to 1991.

As mentioned previously, and as will become apparent in the analysis presented below, wage and earnings data for London are at best, of poor quality.[1] However, given the results presented in chapter seven, it has been considered important to at least attempt to ask some

[1] The most comprehensive source of wage and earning data for manufacturing in Britain is the NES published by the DE. The NES does provide disaggregated data for London, however three particular problems were encountered with this data set. First, the data are divided into four full-time employee categories : male manual, male non-manual, female manual, and female non-manual. These categories are not compatible with the categorisation of employment data. For this reason it is not possible to examine the relationship between wage and employment change by industry. Second, many entries for London are missing in the published data. In fact, it was found that it was only the male manual category which had a sufficient number of entries, and given the importance attached to skills in the production function analyses, it would not be sufficient to simply examine this wage category alone. Third, the data were not compatible with output data which is disaggregated at the 1992 SIC and thus could not be used to estimate labour costs relative to the volume of output.

basic questions about how the structure of London's industry has changed in relation to labour costs. For example, can London's higher wages in manufacturing industry be explained by the particular structure of industry that exists within the capital, and how has change in this structure has affected labour costs over time ?

By 1991, the average wage in the London manufacturing sector was 13% higher than for the nation as a whole. Table 8.1 shows wages per head in manufacturing industries for Great Britain in 1984 and 1991, and also shows London's employment shares in each industry. The data in the table are ranked by industry on the basis of wage rates, and the purpose is really to determine whether London has employment in industries which nationally have higher wages and how this has changed over time.

In 1984, over 65% of London's manufacturing employment was within industries in which the wage rate was higher than the average for total manufacturing. The comparative figure for Britain is 58%. Approximately 20% of London's manufacturing jobs were in class 47, paper, printing and publishing, in which the wage rate nationally was approximately 19% higher than that for manufacturing as a whole; a further 7% in the chemical industry where the wage rate was 20% higher; 4.3% in the manufacture of motor vehicles where wages were 12% higher; just under 11% in mechanical engineering where wages were 9% higher; and over 15% in electrical and electronic engineering where wages were 1% higher nationally than the figure for total manufacturing. Thus it would seem that in 1984, London's employment was disproportionately concentrated in industries in which labour was relatively highly paid nationally.

Table 8.1 shows that by 1991, London's employment structure was still orientated towards these types of industries. However, most interesting is that there was actually a slight decrease in the absolute share of London's manufacturing employment within higher wage sectors. By 1991 London had just over 64% of manufacturing jobs within relatively high wage sectors, a decline of just under 1% on the 1984 figure. Nationally, the share of employment in industries with above average wage rates fell even further by 7%, to 54% of total jobs.

Table 8.1 : Wage rates in Great Britain and the employment structure of London industry, 1984 and 1991.

Industry	wage rate	1984 index*	London emp. share	industry**	wage rate	1991 index	London emp. share
21 Extraction/preparation: metalliferous ore	10468	136	0.02	33 Manufacture: office machin	18638	139	2.17
26 Production of man-made fibres	9972	130	0.03	25 Chemical industry	17177	128	7.22
33 Manufacture: office machinery/D.P. equip.	9524	124	2.56	26 Production of man-made fib	16981	127	0
25 Chemical industry	9245	120	7.04	36 Manufacture of other transp	15970	119	1.8
47 Manufacture of paper/paper products; etc	9115	119	19.93	35 Manufacture: motor vehicle	15489	116	4.82
22 Metal manufacturing	8901	116	1.33	22 Metal manufacturing	15458	115	1.09
35 Manufacture: motor vehicles/parts thereof	8575	112	4.3	47 Manufacture of paper/paper	15199	113	25.48
36 Manufacture of other transport equipment	8484	111	1.97	32 Mechanical engineering	14620	109	9.44
23 Extraction of minerals (Other)	8359	109	0.11	23 Extraction of minerals (Othe	14591	109	0.1
32 Mechanical engineering	8344	109	10.71	34 Electrical/electronic enginee	13591	101	12.32
24 Manufacture: non-metallic products	7785	101	1.97	24 Manufacture: non-metallic p	13243	99	1.47
34 Electrical/electronic engineering	7729	101	15.13	37 Instrument engineering	13215	99	1.98
48 Processing of rubber/plastics	7478	97	2.56	48 Processinng of rubber/plasti	12845	96	3.05
37 Instrument engineering	7394	96	2.6	31 Manufacture of metal goods	12012	90	4.53
31 Manufacture of metal goods (Other)	7137	93	4.85	41 Food, drink/tobacco manufa	11748	88	10.8
41 Food, drink/tobacco manufacturing	6997	91	11.36	46 Timber/wooden furniture in	11167	83	3.95
46 Timber/wooden furniture industries	6970	91	4.1	49 Other manufacturing industr	10081	75	3
49 Other manufacturing industries	5957	78	2.97	43 Textile industry	9868	74	1.19
43 Textile industry	5598	73	0.8	44 Manufacture of leather/leath	9018	67	0.44
44 Manufacture of leather/leather goods	5417	71	0.38	45 Footwear/clothing industries	7557	56	5.17
45 Footwear/clothing industries	4620	60	5.31				
					13398		
	7674						

* The index describes the sectoral wage rate relevant to that for all manufacturing where the total manufacturing wages rate =100.
** Wage data for class 21, extraction and preparation of metalliferous ores, were not available for Great Britain in 1991.

Sources : Department of Trade and Industry (1984 - 1991) : Census of Production. London : HMSO.
Censuses of Employment, 1984 and 1991.

One way of examining how change in the structure of London's industry relative to the nation has affected average wages is to construct expected national average wage rates for each year which would result, if the nation had the same structure of employment as London. For 1984 these calculations indicate that the national average wage rate would be 2.7% higher if the national structure of employment was the same as London, and only 2.6% higher by 1991. The implication is that the structure of employment in London has not been moving towards nationally high wage sectors, and thus that the wage gap of over 13% between London and the nation in 1991 cannot be explained solely by the structure of employment within the capital.

Using data from the NES it becomes apparent that the wage costs facing London industries are radically different than those in the nation as a whole, and it would appear that industrial structure, as reflected in the SIC categories, does not provide a full explanation. Table 8.2 shows hourly earnings for sectors of London manufacturing relative to the UK in the years 1984 and 1991. The poor quality of the NES London data is reflected in the large number of missing entries. The table shows hourly earnings only for selected sectors with the data for industries such as 'other manufacturing' not even being reported in the NES published tables. Focusing on the male manual hourly earnings it can be seen that in both years examined London costs were on the whole significantly higher than in the nation. For example, in 1984 the table shows that hourly earnings in London's electrical engineering industries were between 5% and 9% higher for manual employees, and 14% and 16% for non-manual employees. In the manufacture of paper and printing industries London hourly earnings were approximately 33% higher for manual workers, and between 23% and 25% higher for non-manual workers. For all manufacturing industries, again London wages were significantly higher in 1984.

These observations are also true of 1991, and indeed in many categories the difference between London and the nation has increased over the seven year period. For example, hourly earnings for male-manual employees in electrical engineering are now 13% higher than the nation and for non manual-female 30% higher than the nation, and in the paper and printing industries the non-manual male and non-manual female earnings are significantly

Table 8.2 : London's hourly earnings in manufacturing industries relative to Great Britain in 1984 and 1991

	1984				employment share
	MM	NMM	MF	NMF	
Metals					1.34
Other minerals and mineral products					2.08
Chemical industry	100				7.04
Manufacture of metal goods n.e.s	109				4.85
Mechanical engineering	105				10.71
Electrical engineering	105	116	109	114	17.68
Manufacture of motor vehicles	108				4.3
Manufacture of other transport equipment					1.97
Instrument engineering	111				2.6
Food, Drink and Tobacco manufacture	110				11.36
Textiles					0.8
Footwear, Clothing, and Leather			101		5.68
Timber and wooden furniture industries	109				4.1
Manufacture of paper/paper products; printing anc	133	125		123	19.93
Rubber and plastics	94				2.56
All manufacturing	105	118	119	130	

	1991				employment share
	MM	NMM	MF	NMF	
Metals					1.09
Other minerals and mineral products					1.57
Chemical industry	102				7.22
Manufacture of metal goods n.e.s					4.53
Mechanical engineering	109				9.44
Electrical engineering	113	111	103	130	14.49
Manufacture of motor vehicles	127				4.82
Manufacture of other transport equipment					1.8
Instrument engineering					1.98
Food, Drink and Tobacco manufacture	112			120	10.8
Textiles					1.19
Footwear, Clothing, and Leather					5.61
Timber and wooden furniture industries					3.95
Manufacture of paper/paper products; printing anc	129	128		132	25.48
Rubber and plastics					3.05
All manufacturing	115	120	110	133	

Notes :
(1) The figures presented are the London hourly wages indexed to the same figures for Britain.
(2) Hourly figures have been used rather than weekly because more entries were available for London.

Source : Department of Employment (1984-1991) : New Earnings Survey. London : HMSO.

higher now than they were in 1984. For all manufacturing industries, London wages have grown faster than the nation for male-manual and female non manual-employees. The important point demonstrated by table 8.2 is that despite the poor quality of the data, the general indication is that higher aggregate wages in London are not created solely by the compositional mix of industries defined at the class level of the SIC. London faces higher wages than the nation over and above the particular structure of costs created by industrial mix. Bearing in mind the results of chapter seven, it is highly likely that the reason for this is that a different type of manufacturing exists within the capital even within industrial sectors; one much more highly skilled, less labour intensive, and able to offset the higher operating costs of the capital with the increased marginal productivity of labour.

The changing structure of London industry needs to be examined in more detail, however clearly wage data are not adequate for this task and the chapter now turns to consider average labour productivity by manufacturing sector in London. It is worth mentioning at this stage that any analysis of industrial structure may be seriously limited by the scope of the SIC, since important structural differences, in the nature of industry, are masked by even the most detailed official classifications. In other words, perhaps its not so much structure, as type of activities within industrial structure, that would be ideally examined.

8.1.2 Structural characteristics of change in average labour productivity in manufacturing in London and Britain.

The purpose of this section is to explore structural influences on labour productivity change. Table 8.3 shows average labour productivity figures at the section level of the 1992 SIC for manufacturing industries in London and Britain in the years 1984 and 1991. At the national level, some industries exhibit much higher average labour productivity than others, presumably because of the level of capital and related differences in the marginal product of labour. For Britain in the years described in the table, industries with the highest average labour productivity include chemicals and fibres, wood manufacture, food, beverages and tobacco, electrical and optical goods, machinery manufacture, and paper and printing. At the other extreme, the 'other' manufacturing industries, metal manufacturing industries, and

Table 8.3 : Labour productivity in manufacturing sectors in Britain and London, 1984 and 1991. (section level 1992 SIC).

	Britain		London		change 1984-1991			
	1984	1991	1984	1991	Britain (abs)	(%)	London (abs)	(%)
Food, beverages and tobacc	23.27	29.04	18.54	32.31	5.77	24.78	13.78	74.33
Textiles	10.72	13.36	12.42	14.00	2.65	24.70	1.58	12.68
Wood	33.49	36.68	38.39	46.04	3.18	9.50	7.65	19.92
Paper and printing	20.07	24.98	20.34	30.96	4.90	24.43	10.62	52.22
Chemicals and fibres	30.33	40.38	19.04	44.19	10.04	33.11	25.15	132.10
Rubber and plastics	17.16	24.98	14.46	21.05	7.82	45.57	6.59	45.59
Non metallic mineral produc	20.50	24.52	12.10	15.05	4.02	19.62	2.95	24.38
Metals	12.05	14.12	8.78	13.62	2.07	17.16	4.84	55.15
Machinery	23.75	25.02	25.86	31.41	1.27	5.35	5.55	21.47
Electrical and optical	21.80	27.77	19.32	30.04	5.97	27.37	10.72	55.50
Transport	18.01	25.56	17.17	22.36	7.55	41.91	5.19	30.25
Other manufacturing	6.11	7.03	8.51	14.70	0.92	15.05	6.19	72.77
Total manufacturing	18.84	23.62	17.65	27.56	4.78	25.35	9.90	56.10

textiles have levels of labour productivity well below that for all manufacturing. In fact, labour productivity in 'other' manufacturing is exceptionally low and it is not clear from the data why this is the case. The sector actually includes an industry described as 'recycling' which appears to employ many people but which may not produce much output, and this is likely to be important in influencing the extremely low value. The point that can be made about the national figures is that such variation exists between the sectors that aggregate manufacturing productivity could be spatially differentiated at the regional level for 'structural' reasons, not because individual sectors display different labour productivity, but because the employment structure of the region is disproportionately concentrated in nationally higher or lower average labour productivity industries.

Turning to the London figures, it can be seen that structural factors do not provide a single explanation at the coarse level of industrial disaggregation permitted by the data. For both years shown, the sectoral labour productivity figures for London are very different from those of the nation as a whole. In 1984, the textile industry, wood manufacture, paper and printing, machinery manufacture, and 'other manufacturing' had higher levels of labour productivity in London than they did in the nation as a whole, and the remaining seven sectors had lower labour productivity in the capital. Yet by 1991, the situation had changed and, with the exception of the non metallic minerals industries, London displayed higher labour productivity in the remaining 11 sectors of manufacturing.

Table 8.3 also shows labour productivity change by sector in London and Britain over the 1984 to 1991 period. The table shows that average labour productivity has grown nationally in all industries defined at this level of industrial disaggregation. Particularly large relative increases occurred in transport, rubber and plastics, electrical and optical goods, chemicals and fibres, textiles, and food, beverages and tobacco.

However, in all but four industries, labour productivity in London has grown at a faster rate in both relative and absolute terms than in the nation as a whole. Labour productivity in London's textiles and transport industries grew well below the national levels in relative and absolute terms, while in the rubber and plastics and non metallic mineral products

industries, relative labour productivity grew slightly higher than in the nation over the period defined, although this growth was smaller in absolute terms. Of the remaining eight sectors, labour productivity growth in London was exceptional compared to the nation, as is clear by a comparison of the figures, and particularly for the chemicals and fibres industry, food, beverages and tobacco, paper and printing, and 'other manufacturing'.

Again, the indication is that 'structural' effects given national productivity change are difficult to identify. These effects can be usefully quantified and categorised using a shift-share analysis of growth in average labour productivity developed by Ledebur and Moomaw (1983). The ratio nature of productivity data renders traditional shift-share methods impossible to use, and Ledebur and Moomaw have developed a method which not only permits productivity change to be broken down into the traditional shift-share components but also allows some basic questions to be asked about the meaning of each component. Ledebur and Moomaw (1983) develop a shift-share analysis of productivity growth such that :

$$nn^* = nN^* + \sum t_i r_i \left[(R^* + T^* + T^*R^*) - N^*\right] + \sum t_i r_i \left[(r^* - R^*) + (t^* - T^*) + (t^*r^* - T^*R^*)\right]$$

where $n(N)$ is regional (national) productivity in total manufacturing, $r_i(R_i)$ is regional (national) productivity in the ith manufacturing sector, $t_i(T_i)$ is the share of employment for the ith industry in the region (nation) and * indicates a proportional change. The three terms on the right hand side respectively represent the regional share component, the structural shift component, and the differential shift component.

What is perhaps most useful about this shift-share analysis is that Ledebur and Moomaw specify means of analysing the results obtained on structural and differential effects. They point out that there are three reasons why the structural effect may be positive :

1) if high productivity growth industries are concentrated in the region
(i.e. if $\sum t_i r_i R_i^* > \sum T_i R_i R_i^*$)

2) if high productivity industries that have increasing employment shares are concentrated in the region (i.e. if $\sum t_i r_i T_i^* > \sum T_i R_i T_i^*$)

3) if high productivity growth industries that have increasing employment shares are concentrated in the region (i.e. if $\sum t_i r_i T_i^* R_i^* > \sum T_i R_i T_i^* R_i^*$).

A further three reasons are given for why the differential effect may be positive :

1) if productivity grows faster for industries in the region than for the nation (i.e. if $\sum t_i r_i (r^* - R^*) > 0$

2) if the redistribution of employment to high productivity industries is faster in the region than the nation (i.e. if $\sum t_i r_i (t^* - T^*) > 0$

3) if the interaction between employment shares and productivity growth is stronger for the region than the nation (i.e. if $\sum t_i r_i (t_i^* r_i^* - T_i^* R_i^*) > 0$

Table 8.4 presents the results of a shift-share analysis of productivity change between London and Britain over the 1984 to 1991 period. The results indicate that London higher rate of productivity growth can be explained by both structural and differential effects, although the differential effect is clearly dominant. The positive structural effect appears to arise from London's large shares of employment within paper and printing, food, beverages and tobacco, rubber and plastics, and chemicals and fibres. On the basis of the three reasons given for a positive structural effect, only 2 and 3 are relevant to London. In other words, it is not that nationally high productivity industries are concentrated in London, but that rather high productivity industries and high productivity growth industries with increasingly employment shares, are concentrated in the capital.

However, the differential effect is clearly the most important to London, and particularly large differences in growth rates between London and the nation can be found in the paper and printing industry, chemicals and fibres, and food, beverages and tobacco. In these sectors London's growth in labour productivity has vastly outstripped the nation. Of the three reasons given for a positive differential shift component, the London case is simple and clear : productivity in London's industries is growing faster than the nation, with no indication that the redistribution of employment or the interaction between employment shares and productivity growth has contributed to higher rates of productivity in London. In other words, of the three reasons given for the positive differential effect, only the first is relevant to London.

Table 8.4 : A shift-share analysis of productivity change between London and Great Britain 198

	shift-share components for London	
	structural	differential
Food, beverages and tobacco	0.12	0.77
Textiles	-0.17	0.05
Wood	0.04	-0.03
Paper and printing	0.89	2.57
Chemicals and fibres	0.10	1.26
Rubber and plastics	0.14	-0.02
Non metallic mineral products	-0.04	-0.03
Metals	-0.08	0.14
Machinery	-0.20	-0.07
Electrical and optical	-0.25	0.08
Transport	0.01	0.05
Other manufacturing	0.01	0.10
Total	0.57	4.86
Total shift	5.43	
Regional share	4.48	
Actual productivity change	9.91	

The sectoral productivity figures make clear that structural effects, based on national levels of productivity and productivity growth, cannot explain the growth of average labour productivity in London manufacturing.[2] London's experience of industrial change has been very different to that of the nation as a whole. Until now the compositional mix of London's industries has been examined relative to national levels of productivity. However, it may be that rather than 'structural' factors it is increasing specialisation in London that has induced productivity growth. Average labour productivity describes the ratio of output per employee, however it is important to break this measurement down into its two basic components in order to identify the fundamental dimensions of change.

8.1.3 The components of sectoral productivity change : specialisation and productivity-led employment decline.

The following section explores the components of average productivity change in London : change in employment and output by sector. The rationale for doing so is that to focus purely on the measurement of average labour productivity may be misleading. The aggregate figures presented in chapter six showed that both manufacturing employment and output in London have fallen over the 1980s, but that employment has fallen much faster, inducing increased labour productivity in the capital. Rather than examining how much output London workers now produce, it may be more fruitful to conceive the situation in terms of how much labour is now demanded to produce a unit of output, and how change in the sectoral composition of London's industries may have affected labour demand.

Table 8.5 shows change in output and employment for the sectors of London manufacturing over the 1984 to 1991 period. Two periods are defined in the table to differentiate the recessionary from non-recessionary period. Considering first output change over the 1984

[2] It should be stressed that this finding is not inconsistent with the results of the models presented in chapter seven. The structure of industry was found to be an important variable in influencing overall levels of productivity across the counties of Britain only after controlling for other factors. While the results presented in this chapter have shown that industrial structure cannot 'explain' London's higher rates of labour productivity growth in the manufacturing sector, that it is not to say that it does not still exert a considerable influence on levels of productivity having taken into the account the influence of other factors such as differences in capital intensity.

Table 8.5 : The components of productivity change in London.

	manufacturing output in London			change in London's manufacturing output					
	1984	1987	1991	1984 -1987		1987 -1991		1984 -1991	
Food, beverages and tobacco	1102	1308	1125	206	18.69	-183	-13.99	23	2.09
Textiles	504	480	346	-24	-4.76	-134	-27.92	-158	-31.35
Wood	296	336	227	40	13.51	-109	-32.44	-69	-23.31
Paper and printing	2274	2710	2849	436	19.17	139	5.13	575	25.29
Chemicals and fibres	751	993	1008	242	32.22	15	1.51	257	34.22
Rubber and plastics	221	256	207	35	15.84	-49	-19.14	-14	-6.33
Non metallic mineral products	135	132	78	-3	-2.22	-54	-40.91	-57	-42.22
Metals	462	444	373	-18	-3.90	-71	-15.99	-89	-19.26
Machinery	1060	795	721	-265	-25.00	-74	-9.31	-339	-31.98
Electrical and optical	1729	1636	1263	-93	-5.38	-373	-22.80	-466	-26.95
Transport	598	740	477	142	23.75	-263	-35.54	-121	-20.23
Other manufacturing	228	240	211	12	5.26	-29	-12.08	-17	-7.46
	9360	10068	8885	708	7.56	-1183	-11.75	-475	-5.07

	manufacturing employment in London			change in London's manufacturing employment					
	1984	1987	1991	1984 -1987		1987 -1991		1984 -1991	
Food, beverages and tobacco	59452	47071	34808	-12381	-20.83	-12263	-26.05	-24644	-41.45
Textiles	40588	40211	24714	-377	-0.93	-15497	-38.54	-15874	-39.11
Wood	7713	6767	4927	-946	-12.27	-1840	-27.19	-2786	-36.12
Paper and printing	111791	97619	92015	-14172	-12.68	-5604	-5.74	-19776	-17.69
Chemicals and fibres	39463	30827	22799	-8636	-21.88	-8028	-26.04	-16664	-42.23
Rubber and plastics	15261	15243	9832	-18	-0.12	-5411	-35.50	-5429	-35.57
Non metallic mineral products	11194	7512	5212	-3682	-32.89	-2300	-30.62	-5982	-53.44
Metals	52667	38487	27414	-14180	-26.92	-11073	-28.77	-25253	-47.95
Machinery	40994	33434	22959	-7560	-18.44	-10475	-31.33	-18035	-43.99
Electrical and optical	89519	71112	42042	-18407	-20.56	-29070	-40.88	-47477	-53.04
Transport	34824	27855	21349	-6969	-20.01	-6506	-23.36	-13475	-38.69
Other manufacturing	26764	21790	14343	-4974	-18.58	-7447	-34.18	-12421	-46.41
	530227	437927	322413	-92300	-17.41	-115514	-26.38	-207814	-39.19

to 1987 period in London, it can be seen that, for manufacturing as a whole, output grew by 7.6%. In the nation, national manufacturing output grew by over 15%. Of the twelve sectors defined at this level of disaggregation, seven experienced output growth over this period, and particularly large absolute and relative gains were to be found in four industries. Food, beverages and tobacco manufacture expanded output by 18.7% or by £206 million, the paper and printing industry by 19.2% or by £436 million, the chemicals and fibres industry by £242 million or by 32.2%, and the manufacture of transport goods by 23.8% or by £142 million. These were the only four sectors which experienced a substantial increase in the relative share of London's output over this period. Output declined in the remaining five sectors over this period and particularly severely in metal manufacturing, where GDP fell by 25% or by £265 million.

In the second period defined in the table, 1987 to 1991, the fortunes of London's industries changed somewhat in output terms, and total manufacturing GDP fell by just under 12%. Over this duration output declined in all but two of the twelve sectors. The paper and printing industry continued to grow, expanding output by just over 5% or by £139 million, and a minor expansion of output in the chemical and fibres industry of 1.5% or £15 million also took place over this period. For the remaining five sectors that experienced output growth in the earlier period, decline occurred between 1987 and 1991, and in fact, with the exception of the food, drink and tobacco, industry, was severe enough to push output below 1984 levels by the end of the decade. Thus, the figures for the 1984 to 1991 period as a whole show output growth in only three sectors of industry, paper and printing, chemical and fibres, and food drink and tobacco, and these industries were the only ones in London to increase their relative shares of total output.

Compared to Great Britain, London's output performance over the seven year period has been poor, since output actually expanded nationally by over 6%. However, of the twelve industrial sectors defined in the table, two actually performed well in London relative to the nation. Output in London's paper and printing industry grew by over 25% relative to a national growth of just under 24, and the chemical and fibres industry expanded output by over 34% in London and by only 12% in the nation as a whole. These two sectors are

clearly important in London's manufacturing today. By 1991 the paper and printing industry output accounted for approximately one third of London's total manufacturing output compared to a share of 24% in 1984, and the chemicals and fibres industry accounted for just over 11% in 1991 compare to 8% in 1984. Considering the three sectors that experienced output growth over the seven year period, by 1991 together they accounted for over 56% of London's total manufacturing output compared to 44% in 1984. The important point is that it may be only three sectors of London's manufacturing that have expanded output, but they account for over half of total manufacturing output in the capital.

The indication may therefore be that to some extent London's manufacturing is becoming increasingly specialised in a limited range of sectors. The poor disaggregation of the output data does not allow this issue to be explored in any detail. However using the criteria of output growth and change in relative output share over the 1984 to 1991 period as a whole, the paper and printing industry, chemicals and fibres, and food, drink and tobacco manufacturing are clearly important in the capital today. Furthermore, it is in these three sectors that productivity has grown most rapidly. However, the figures presented above are to a large extent indicative of the contemporary macro-economic conditions, and particularly of the recession at the end of the 1980s. If the 1984 to 1987 period alone was used for analysis, industries such as the manufacture of transport goods, rubber and plastics, and wood manufacture would also have to be included as important output growth sectors in the capital. The issue of specialisation can be examined further by considering the second component of productivity change - employment decline.

Chapter three reviewed employment trends in London's manufacturing. However, it is worth considering here the implications of change in the structure of London's output for the labour demanded by these particular industries. Table 8.5 shows employment change figures for the eleven sectors of London's manufacturing industry. Most noticeable is that any output growth achieved over the two periods defined in the table has not corresponded with an expansion in labour demand. Indeed, the figures show that for many industries employment has been changing in radically different ways to output. For example, in the food, drink and tobacco industry output grew over the seven year period by just over 2%

while over 40% of jobs were shed, in paper and printing output expanded by 25% while employment declined by 18%, and in the chemicals and fibres industry output grew by 34% while 42% of jobs were shed. In a further five industries - rubbers and plastics, metal manufacturing, electrical and optical goods, transport good, and 'other manufacturing - both output and employment fell although at very different levels of magnitude inducing substantial productivity gains.

For the remaining manufacturing sectors however, a greater degree of consistency in output and employment change can be identified. For example, in the textiles industry output decline by approximately 31% while employment declined by just over 39%, in the manufacture of wood output fell by 23% and employment by 36%, in non metallic mineral industries output declined by 42% and employment by 53%, and in the manufacture of machinery output fell by 32% and employment by 44%. In these four sectors, productivity grew because employment declined at a faster rate than output, however the direction and magnitude of decline is not radically different. The point is, that these sectors may be characterised by extreme decline in London, but this cannot be said for all types of manufacturing and again this is likely to be indicative of some degree of specialisation. The most important aspect of the data is that overall, large productivity gains in London have only been achieved at the expense of employment loss and even output growth in any sector at any time has not corresponded with increased demand for labour.

An equally important issue is the type of jobs that have been lost from the different manufacturing sectors. The aggregate data show that of manufacturing jobs shed in London over the 1984 to 1991 period, approximately 10% were part time, while for Britain as a whole only 6% were part time. However, comparing sectoral productivity figures calculated only on the basis of full-time workers as in table 8.6, shows very little difference from the figures calculated on the basis of all workers. Again, London aggregate average productivity growth is approximately twice that of the nation, and in all but four sectors London's growth was significantly higher than the nation.

Table 8.6 : Productivity growth in London and Britain calculated on the basis of full-time employment only, 1984-1991. (percent)

	London	Britain
Food, beverages and tobacco	67.85	23.46
Textiles	13.27	24.93
Wood	21.46	9.38
Paper and printing	45.23	24.81
Chemicals and fibres	129.77	32.55
Rubber and plastics	46.56	46.92
Non metallic mineral products	23.81	19.91
Metals	56.14	17.80
Machinery	21.61	5.57
Electrical and optical	55.50	27.38
Transport	31.05	42.79
Other manufacturing	73.33	14.82
	54.31	25.65

In examining the components of London's productivity growth it would seem that there may be two important processes at work in London's manufacturing. The first is the specialisation of output into a small number of manufacturing industries. Excluding the food, drink and tobacco industry, chemicals and fibres, and paper and printing from London's output change, there would have been a net decline in manufacturing output over the 1984 to 1991 period of approximately 25%. These three sectors are the only manufacturing growth sectors in London today, and are to some extent masking the second most important trend from the aggregate figures - relative and absolute decline in manufacturing industry. Employment decline in London is the basic most important component of increased productivity. Output has increased in three sectors of London's manufacturing, but even within these sectors employment decline still formed the most important component of productivity growth. If these three sectors were excluded from London's manufacturing, productivity would still have increased in the residual manufacturing sector in London by approximately 38%, because while output would have declined by 25%, the number of jobs would have fallen by over 46%. For most sectors in London, and indeed for the manufacturing sector as a whole, increased productivity appears as a simple function of decline.

8.1.4 Discussion.

The purpose of this first part of the chapter has been to explore London's labour productivity with respect to the changing compositional mix of industries within the capital. The most detailed data sets on output, employment and wages for London have been used, although even with these only limited success can be achieved. It is not the intention here to make final conclusions about London's productivity. This is done in the next concluding chapter where evidence from the thesis as a whole is interpreted. However, some important conclusions may be reached on the basis of the analysis and discussion above.

First, it has been demonstrated that 'structural' effects arising from the compositional mix of industries in London relative to the nation do not provide a single viable explanation for manufacturing change in the capital. In terms of both wages and productivity, London

operates, and has changed, in radically different ways to Britain as a whole because the interaction between manufacturing labour, output and wages in the capital is very different to that of the nation. The data do not make clear why this may be the case, but it would seem that increasing specialisation of manufacturing activities in London is likely to be important in this respect. It may be that the dual processes of decline and specialisation are linked, as manufacturing change in the capital becomes increasingly orientated towards activities which can offset the diseconomies of London, and the higher operating costs of London, with higher and increasing average marginal productivity of labour, perhaps at least partly induced through increased capital intensification. If this is the case, it would be broadly consistent with the arguments put forward in the global city hypothesis, however the point that appears to emerge from the analysis in this thesis is that the issue of comparative advantage may be of much greater importance than perceived in this literature, and that an analysis of labour productivity in London has the potential to further our understanding of these processes.

Specialisation has been demonstrated to some extent by identifying sectors which appear to be increasing output share, and those in which the indicators of both employment and output tend to indicate eradication from London. The printing and publishing industry, chemicals and fibres, and food, drink and tobacco manufacturing are critically important to London's manufacturing today, providing over half of the capital's total manufacturing output and being the only sectors to experience relative and absolute growth over the 1984 to 1991 period as a whole.

However, the question remains as to what is actually happening within the twelve sectors defined. For many sectors, the differences in magnitude between employment and output change have been enormous, suggesting some degree of dynamism or perhaps specialisation within. The existing data for London are simply not of the quality required to address this issue properly, and this must be another important conclusion of the discussion above. It seems increasingly likely that the categories defined by the SIC are inadequate to pin down the unique nature of London's manufacturing. Although the data above are only disaggregated into 12 sectors, even at much more detailed levels of disaggregation the SIC

can only describe manufacturing activities in terms of the associated end product. It is not possible to say anything on top of this about the nature of work conducted in any location, and it is highly likely that this would have significant implications for levels of productivity and productivity growth. For example, Hall's *Industries of London* showed that manufacturing activities in the capital tended to be involved in later stages of the productive process. Under the existing SIC, these activities would only have been defined with reference to their end product, however, the fact that the nature of manufacturing was unique must have had important implications for the wages paid to labour and for the average productivity of different sectors, as it is likely to have today.

These issues will be returned to in the conclusion of this thesis. Aside from specialisation it is hoped that the above analysis has also demonstrated the importance of productivity growth for London's employment change. Employment decline in London can be conceptualised in terms of productivity growth, as it also can in the nation as a whole. Of course, London is losing jobs faster than the nation, but this should not be so surprising given that the wage rate is higher in London and thus the elasticity of employment with respect to wages is likely to be higher in the capital than the estimate obtained across all counties in the Dhrymes production function in the previous chapter. Furthermore, wages appear to be growing in London at a much faster rate than in the country as a whole. Perhaps the most important point is to view employment change and labour productivity in terms of labour costs, and as demonstrated in chapter seven, labour costs are not substantially different in London from the nation. London manufacturing employs less workers, and as wages grow at a faster rate than the nation, it continually employs less people. Again, this may be indicative of particular types of manufacturing activities which London specialises in, and not just with respect to the sectors available for analysis in the poorly disaggregated output data.

The important point is that labour is a derived demand, and that average labour productivity describes the relationship between the demand for labour, and wage and output change. In the second part of this chapter a methodology is presented which attempts to isolate the employment effects of productivity growth from those generated through output change.

Part II : Quantifying the employment consequences of change in average labour productivity : a productivity growth interpretation of the labour demand shift-share model.

8.2.0 Introduction.

The following section has two main related purposes. The primary objective is to attempt to quantify the employment consequences of productivity growth in London. However, in achieving this aim some methodology has been developed that may be used to examine productivity growth. The specific method used involves empirical and theoretical modifications to a labour demand shift-share model set out by Casler (1989) and outlined in full in Graham and Spence (forthcoming b). The method proposed is in itself interesting, and requires explanation prior to the presentation of results. The section therefore focuses first on methodological issues, and finally present results for London.

Shift-share analysis has been introduced in previous chapters of this thesis and requires no further discussion here. The technique was seemingly most popular in geographical analyses of the 1960s and 1970s. However, more recently a renewed interest in the method is evident in the literature, with modifications being proposed to overcome some of the apparent deficiencies, (Haynes, Machunda, 1987; 1988; Knudsen, Barff, 1991; Arcelus, 1984; Barff and Knight, 1988; Berzeg, 1984).

One of the main criticisms of shift-share is that it is essentially a-theoretical. In a recent paper, one author has proposed a modification of the shift-share method which provides a sound theoretical context derived from the theory of the firm (Casler, 1989). In doing so Casler has created an extremely useful modification of the technique for urban and regional analysis of employment change. However, the precise shift-share method set out by the author may not provide meaningful results without further modification and extension. While it was recognised within the original paper that extensions of the model may be possible, in fact it is the case the model simply cannot function empirically or theoretically without further modification. The following section applies an extension to the model to

allow for its implementation, and more importantly to extend its use to proper and sensible analyses of productivity growth. It begins by outlining the precise method set out by Casler, and illustrates the deficiencies of the basic method using an empirical example of one region. An extension to Casler's method is then proposed and its theoretical and empirical implications discussed. This extension is then used to consider the employment consequences of productivity growth in London.

8.2.1 The theoretical context for shift and share analysis.

The purpose of Casler's paper was to provide a theoretical basis for shift-share analysis by combining the method with a neo-classical model of labour growth. While other authors have pursued similar objectives (Andrikopoulos, 1980; Knudsen, Barff, 1991), Casler's contribution is notable in its modest data requirements and ease of implementation. Casler begins by specifying the demand for labour in terms of a model of labour growth based on the theory of the firm, in which, assuming cost minimisation, labour is viewed as a derived demand. Developing his contribution with respect to the conventional shift-share identity, he produces an analytical model in which employment change is expressed in terms of output growth and the elasticity of employment with respect to output. It is worth outlining the precise method in detail.

Casler starts with the familiar shift-share expression (employment change = regional share + differential shift + structural shift) :

$$X.^*_j = X^* + \sum_i \alpha_{ij}\left(X^*_{ij} - X^*_i\right) + \sum_i \alpha_{ij}\left(X^*_i - X^*\right) \qquad [1]$$

where X is employment, i denotes an industry, j a region, and * growth rates, while a_{ij} is the share of region j's total employment in industry i.

Assuming cost minimisation for firms, subject to a fixed level of output and given input prices, the derived demand for labour is written as :

$$X_{ij} = X_{ij}\left(P_{1j}, P_{2j}, P_{3j}, \ldots, P_{mj}; Q_{ij}\right) \qquad [2]$$

where : P_{kj} = the k^{th} input price in region j

Q_{ij} = the level of output produced by industry i in region j

which in growth rates can be expressed as :

$$\frac{dX_{ij}}{dt} \cdot \frac{1}{X_{ij}} = \sum_k \frac{\partial X_{ij}}{\partial P_{kj}} \frac{dP_{kj}}{dt} \cdot \frac{1}{X_{ij}} + \frac{\partial X_{ij}}{\partial Q_{ij}} \frac{dQ_{ij}}{dt} \frac{1}{X_{ij}} . \qquad [3]$$

Defining the elasticity of employment for industry i in region j with respect to input price k as :

$$E_{ijk} = \frac{\partial X_{ij}}{\partial P_{kj}} \frac{P_{kj}}{X_{ij}} \qquad [4]$$

and the elasticity of employment with respect to output for industry i in region j as :

$$E_{ijQ} = \frac{\partial X_{ij}}{\partial Q_{ij}} \frac{Q_{ij}}{X_{ij}} \qquad [5]$$

the employment growth expression may be written with elasticities as :

$$X^*_{ij} = \sum_k E_{ijk} P^*_{kj} + E_{ijQ} Q^*_{ij} . \qquad [6]$$

For total employment growth in regions j, [6] appears as :

$$X.^*_j = \sum_i \sum_k \alpha_{ij} E_{ijk} P^*_{kj} + \sum_i \alpha_{ij} E_{ijQ} Q^*_{ij} \qquad [7]$$

and by defining the aggregate labour price elasticity of demand for industries in region j given a change in price k as :

$$E_{jk} = \sum_i \alpha_{ij} E_{ijk} \qquad [8]$$

equation [7] may be simplified as :

$$X.^*_j = \sum_k E_{ijk} P^*_{kj} \sum_i + \alpha_{ij} E_{ijQ} Q^*_{ij} \, . \qquad [9]$$

Since the input demand equations which emerge from the process of cost minimisation are homogeneous of degree zero in prices, price elasticity effects on employment growth will be zero. Concentrating only the effects of changing output, the differential and proportional output shifts are defined respectively as :

$$Q^s{}^*_{ij} = Q^*_{ij} - Q^*_i \qquad [10]$$

$$Q^s{}^*_i = Q^*_i - Q^* \qquad [11]$$

Thus output growth in industry i in region j can be written as :

$$Q^*_{ij} = Q^* + Q^s{}^*_{ij} + Q^s{}^*_i \qquad [12]$$

and given the condition that the effects of proportional changes in the price of inputs are zero, [12] may be incorporated into [9] to give Casler's modified shift-share equation :

$$X.^*_j = \sum_i \alpha_{ij} Q^* E_{ijQ} + \sum_i \alpha_{ij} Q^s{}^*_{ij} E_{ijQ} + \sum_i \alpha_{ij} Q^s{}^*_i E_{ijQ} \, . \qquad [13]$$

In defining the shift-share identity in this way the author has produced an analytical model which is superior in two important respects to the standard shift-share analysis. First, unlike the a-theoretical standard shift-share methodology, the demand for labour in Casler's model is viewed as a derived demand. It is seen as a function both of the relative prices of other factor inputs to production and of the level of output demanded. This represents an important theoretical contribution in which "input growth is derived from the growth of outputs in that the production of outputs necessitates the use of inputs and output demand is the fundamental causal influence. Therefore, at least, the specification of shift and share components in terms of output is theoretically more sound than the definitions stated in terms of inputs" (Casler, 1989, 46).

Second, since employment change in [13] becomes a function of the growth of output, the complexities of industrial change, such as differences in regional labour productivity, are introduced into the model. Standard shift-share techniques specify the components of input change in terms of that input, and in doing so they effectively assume a unitary elasticity of employment with respect to output across industries and regions. Casler illustrates this by showing that [13] above is identical to [1] under this assumption. In fact the definition of employment elasticities with respect to output, which eliminate the need for the assumption of constant elasticity, should yield a different set of figures for each area which measure the responsiveness of employment to output change by industry, and thus should allow for the special characteristics of regional industries to be incorporated into the model. Casler argues that the elasticities inherently reflect productivity, embodying differing technological characteristics of production by industry and area. Equation [13] then, is essentially different from [1] in that the differential and structural components depend not only on the structure of industry but also on the unique employment elasticities of each area and each region (E_{ijQ}), while the differences in the regional share effect are purely attributable to the elasticities.

However, while these two attributes are desirable in a shift-share model, in practice the specific method outlined in equation [13] does not produce meaningful results. The specific problem stems from the definition of the elasticities of employment with respect to output.

Equation [13] allows for the calculation of these elasticities as simply the proportional change in employment divided by the proportional change in output, under which the arithmetic of the shift-share equation functions, in the sense that the components defined sum to actual employment change. While Casler does point out in the conclusion to his paper that estimation techniques may be used to calculate the elasticities, no shift-share method which incorporates this extension is set out in the paper, and in fact [13] is presented as a viable model and the use of estimated elasticities as optional. However, in defining the elasticities so broadly, they embody various factors which influence the responsiveness of employment to output change, and not simply the elasticity of employment in this respect. In particular, and as Casler himself points out, the elasticities also embody the technological characteristics of production which vary by industry and by region.

In sum, the calculation of the elasticities by a simple division of proportional employment by proportional output change, produces figures which quite simply comprise too many different influences upon employment change, and not just the influence of the 'pure' elasticity effect of output change. Consequently, important theoretical and empirical deficiencies of this precise method arise. It is worth illustrating the main deficiencies of the model in an empirical example.

8.2.2 The Casler shift-share methodology applied.

Table 8.7 shows stages in the formulation of a shift-share analysis of London's manufacturing fortunes using equation [13] above. The first column in the table shows the elasticities of employment with respect to output for London, calculated by dividing proportional employment change in the capital over the 1984 to 1991 period by proportional output change. In the first instance, it can be seen that many of these elasticities are large, particularly in food, beverage and tobacco manufacture, rubber and plastic, and other manufacturing, with quite exceptional changes in employment occurring for a unit change in output. Furthermore, in three cases the elasticities are negative. This is because in these cases output was actually growing while employment was declining. In

Table 8.7 : A shift share analysis of manufacturing employment change in London compared with the performance of Great Britain, 1984 to 1991 (percent).

		Shift-share components		
	elasticities	regional share	differential	structural
	E_{ijQ}	$\alpha_{ij} Q^*$	$\alpha_{ij} (Q^*_{ij} - Q^*_i)$	$\alpha ij (Q^*_i - Q^*)$
Food, beverages and tobacco	-19.86	0.70	-1.01	0.54
Textiles	1.25	0.48	-1.74	-1.13
Wood	1.55	0.09	-0.51	0.08
Paper and printing	-0.70	1.32	0.30	3.71
Chemicals and fibres	-1.23	0.47	1.66	0.42
Rubber and plastics	5.62	0.18	-1.18	0.82
Non metallic mineral products	1.27	0.13	-0.72	-0.30
Metals	2.49	0.62	-1.77	-0.77
Machinery	1.38	0.48	-2.31	-0.64
Electrical and optical	1.97	1.06	-4.51	-1.10
Transport	1.91	0.41	-1.80	0.06
Other manufacturing	6.22	0.32	-0.80	0.11
Total		6.26	-14.41	1.80
Total Shift		-12.61		
Actual Change		-6.34		

	Shift-share components after multiplication by elasticities		
	regional share	differential	structural
	$(\alpha_{ij} Q^*) E_{ijQ}$	$[\alpha_{ij} (Q^*_{ij} - Q^*_i) E_{ijQ}]$	$[\alpha_{ij} (Q^*_i - Q^*) E_{ijQ}]$
Food, beverages and tobacco	-13.95	20.01	-10.71
Textiles	0.60	-2.18	-1.42
Wood	0.14	-0.79	0.13
Paper and printing	-0.92	-0.21	-2.60
Chemicals and fibres	-0.58	-2.04	-0.52
Rubber and plastics	1.01	-6.63	4.59
Non metallic mineral products	0.17	-0.91	-0.38
Metals	1.55	-4.40	-1.91
Machinery	0.67	-3.18	-0.89
Electrical and optical	2.08	-8.88	-2.16
Transport	0.79	-3.44	0.11
Other manufacturing	1.97	-4.98	0.67
Total	-6.48	-17.64	-15.07
Total shift	-32.71		
Actual Change	-39.19		

most other cases both output and employment were declining yielding a positive elasticity. The definition of a negative elasticity may not in itself be a major problem, but in the arithmetic to follow, as will be shown, it is simply not plausible in the shift-share model.

The basic shift-share components shown in the table are those before multiplication by the elasticities. In other words, they are the employment share weighted output change components. On the basis of these, national trends (regional share) would have created a growth of 6.26% in manufacturing output in London, locational or competitive effects as reflected in the differential component would have shifted output by -14.41%, while on the basis of the structure of London's industry a modest growth of 1.80% would have been expected. These results then suggest that as regards London's manufacturing output performance over the 1984 to 1991 period, the compositional mix of industries within the capital cannot explain the poor output performance, but some locational or competitive effects inherent within London are a more likely explanation.

Considering now the three components of the final shift-share equation proposed by Casler, it can be seen that much different results emerge. Arithmetically it is the case that the shift-share identity sums to actual employment change, which for London was -39.19% over this period. However the results produced are simply not plausible. For example, it would seem that the positive regional share component in output growth has created a decline in employment in London of -6.5%. But this is entirely due to the way in which the elasticities have been derived. In the food drink and tobacco industry, the employment share weighted output growth of 0.70% led to a estimated employment decline of -14% due to the extremely high negative elasticity. This problem is made even clearer in an examination of the differential and structural components. Using the Casler shift-share method London registers a relatively high negative differential shift of -17.6%, and this is accompanied by a strong structural effect of -15.1%. Again, concentrating on the food, beverages, and tobacco industry, the source of these results can be identified. In the case of the differential shift, the output differential component of -1%, shown in the basic shift-share components, when multiplied by the elasticity of -19.9%, produced an expected employment share weighted increase in labour demand of 20%. In other words, although output is expected to decline in

this sector, the model identifies a corresponding growth in employment, and as a result the strength of the negative differential shift is reduced massively. In the case of the structural component, the food, beverage and tobacco was again the dominant influence in the direction of the shift, which was in this case negative, despite a positive structural output growth in the basic shift-share component.

The food, beverage and tobacco industry in itself is not of any particular relevance to an examination of shift-share expression proposed in [13] above. It has simply proven to be a useful example in this case to demonstrate, not just the empirical, but also the major theoretical difficulty with this shift-share approach as it exists at present. From the example of London provided, it may appear simply that this model is a growth model, and that it is not suitable for conditions where output and employment are changing in fundamentally different directions. However, the problem with the model is more fundamental than that. It is fair to say that the elasticities, as defined at present, are not the actual elasticities of employment with respect to output, because they have not held technological change or growth in the intensity of use of capital constant. In other words, it may well be that growth in output corresponds with declines in employment, but theoretically this should not be regarded as the responsiveness of employment to output change because the main causal influences in such transformations in production are likely to be related to capital and technology. While in Casler's labour growth model it is rightly shown that proportional changes in input prices will not affect the demand for employment, it must be the case that capital use over time, technological change, and the changing relationship of these factors to labour should be taken into account when estimating the elasticities of employment with respect to output. Elasticities calculated under these conditions should make more sense empirically. More important, they would also be more theoretically robust thus allowing for the factors of technology and capital to be influential in a model of the derived demand for employment.

8.2.3 A modified shift-share analysis - some empirical and theoretical aspects.

To modify the shift-share method set out in equation [10], the option of utilising estimation techniques to calculate the elasticities of employment with respect to output has to be implemented and reworked into the shift-share model. The purposes of this estimation must be to obtain a set of elasticities which reflect, as closely as possible, the actual responsiveness of employment to output change, and that are not indicative of other influences on the demand for employment. For the purposes of estimation here, data were available on output and employment by industry for manufacturing in British regions, and regression analyses were conducted to estimate the elasticities. The following equation was estimated for each industry :

$$\ln E_{it} = \alpha + \beta_{\delta}\delta_i + \beta_Q \ln Q_{it} + \beta_t t + u_i$$

where :

E_{it} = employment in industry i in time t

a = a region specific constant

d_i = is a set of region specific dummy variables

Q_{it} = output in industry i in time t

t = 1,2,3,4,5,6,7,8 etc. is a time trend for the years 1984 through to 1991.

u_i = a random error term

Cases in the equation comprised the eleven standard regions of Britain for each year between 1984 and 1991 inclusive, yielding 88 observations. The primary aim of the estimation is to obtain the beta coefficient (b_Q) - the elasticity of employment with respect to output. Three points should be made about the specific model used for estimation. First, it can be seen that a fixed effects estimation technique has been used, where the differences between cross-sectional units, in this case regions, can be adequately captured by specifying a different intercept for each cross sectional unit (Judge et al., 1988, 468-489). In allowing the intercept to vary by region, the effects of regional differences in labour demand, other than through output growth, for example through differences in levels of capital stock and in the technological characteristics of production, should be controlled within the

estimation.[3] *F*-tests between the restricted and unrestricted models were conducted to determine if the cross sectional units did require different intercepts through a fixed effects model, and in all cases the *F*-test was significant providing evidence for the need to differentiate the cross-sectional nature of the data[4] (Judge et al., 1988; Màtyàs, Sevestre, 1992).

Second, the time trend included within the estimation is essentially a proxy for technological growth over time, and thus yields a beta coefficient which reflects the elasticity of employment with respect to technological growth over all regions. The time trend was included simply because the estimation uses cross-sectional time series data, and being thus a dynamic model requires a specification of time for the efficient estimation of the elasticity of employment with respect to output. The time variable is of no direct relevance in the formulation of the final modified shift-share model.

Third, in estimating the model across the regions of Britain for each industry, it is assumed that the elasticity of employment with respect to output is constant across space for each sector of industry, given constant levels of technology as reflected in the time trend. One of the benefits of [13] above stressed by Casler was that this shift-share was able to drop the assumption of constant elasticity, and was able to include variations in the technological characteristics of production. However, since the elasticities are calculated on the basis of fixed effects they should not include influences in the demand for employment other than through output change alone. If this is the case, then the rationale for assuming non-

[3] It may be optimal in some cases to attempt to estimate a full labour demand function, in which the elasticities of employment with respect to both capital and output could be determined. However, in the absence of capital stock data, this estimation was not attempted here. Although estimates of capital stock could be obtained for manufacturing industries (see for example Vagionis, Spence, 1994), since it should be possible to extend the shift-share method to include service industries, for which capital data is largely non-existent, it was though desirable to keep data requirements here to a minimum. In fact, the method should provide a sufficiently robust technique for estimation.

[4] In all cases *F* is distributed with 10 and 75 degrees of freedom, and is significant at the 0.01 level. The results of the *F*-test between the restricted and unrestricted models for each industry were : Food, beverages and tobacco (14.88), Textiles (15.19), Wood (89.28), Paper and printing (35.91), Chemicals and fibres (62.34), Rubber and plastics (26.82), Non metallic mineral products (84.38), Metals (98.56), Machinery (20.99), Electrical and optical goods (28.64), Transport (37.88), Other manufacturing (84.14).

constant elasticity across the regions becomes less relevant. In other words, in holding constant differences between the regions in the technological capacity of industry it would seem reasonable to assume that the pure response of employment to output change (b_Q) will be constant over space.

Having estimated the elasticities, important theoretical and empirical implications arise from their substitution into the shift-share model set out in Casler's paper. The use of these elasticities in a shift-share model, such as [13] above will yield four components rather than three. This is because the elasticities have been estimated whilst attempting to control for other influences in employment change, and as such they represent only the direct employment effect of output change. In Casler's model the elasticities included the influence of all factors on employment change and not just those of output growth. For this reason, the multiplication of the three basic shift-share components by the elasticities summed to actual employment change in the Casler model. In the modified shift-share, the regional share, differential and structural components are still included, although in this case they break employment change down only in terms of the relationship between the estimated direct elasticities of employment with respect to output, and the three specifically regional components themselves. Thus, a fourth residual component is also calculated which represents the difference between actual employment change and that created by output change in the region.

In order to establish how this additional term may be interpreted empirically, it is worth returning to the neo-classical labour demand model. The labour growth theory set out in [2] above excludes an important influence on the demand for employment. In most neo-classical growth models a term reflecting the level of technology, or the growth of productivity over time, is included as an important independent variable. The ways in which technology is thought to enter into the neo-classical growth model can be broadly classified into two categories (Bowers, Baird, 1971). First is embodied technological progress, which arises through new types of machines or more productive forms of labour, and the second is disembodied progress, in which new and different combinations of factor inputs cause output to increase. The distinction between these different types of

technological progress is less relevant in the present context. However, it would seem that the inclusion of the growth pattern of technology generally, or in other words what may be termed productivity, should be entirely consistent with the additional shift-share component proposed in this chapter, This is because it captures the influences on employment change other than those created through output change.

Thus, the neo-classical labour growth model may therefore be re-written with an additional term as :

$$X_{ij} = X_{ij}\left(P_{1j},\ P_{2j},\ P_{3j},\ldots,\ P_{mj};\ Q_{ij};t\right) \qquad [14]$$

where : P_{kj} = the k^{th} input price in region j

Q_{ij} = the level of output produced by industry i in region j

t = a technology component which reflects the technology of production.

In growth rates this model is expressed with the additional technology component essentially forming a function of time giving the growth pattern of technology. Put another way, the labour growth model now expresses the changing demand for labour not only as a function of the change in the price of other inputs and the change in the level of output, but also of the productivity gains induced through the passage of time as the technological characteristics of production change :

$$\frac{dX_{ij}}{dt}\cdot\frac{1}{X_{ij}} = \sum_k \frac{\partial X_{ij}}{\partial P_{kj}}\frac{dP_{kj}}{dt}\cdot\frac{1}{X_{ij}} + \frac{\partial X_{ij}}{\partial Q_{ij}}\frac{dQ_{ij}}{dt}\frac{1}{X_{ij}} + \frac{\partial X_{ij}}{\partial t}\cdot\frac{1}{X_{ij}}. \qquad [15]$$

The original derivation of the shift-share equation as set out in Casler's paper can be modified in a straightforward fashion on the basis of this growth rate model. The estimated elasticities can be substituted straight into [15] as :

$$X^*_{ij} = \sum_k E_{ijk}P^*_{kj} + E_{ijQ}Q^*_{ij} + \left(X^*_{ij}\right)_{P,Q} \qquad [16]$$

where $(X^*_{ij})_{P,Q}$ is the change in employment from technological growth over time holding the price of inputs and the level of output constant. Following [6] to [12] above, the resultant shift-share identity would be written, with an additional employment weighted technology or productivity component as :

$$X.^*_j = \sum_i \alpha_{ij} Q^* E_{ijQ} + \sum_i \alpha_{ij} Q^s{}^*_{ij} E_{ijQ} + \sum_i \alpha_{ij} Q^s{}^*_i E_{ijQ} + \sum_i \alpha_{ij} \left(X^*_{ij}\right)_{P,Q}. \qquad [17]$$

Empirically therefore, it seems theoretically robust to interpret this additional residual component in the modified shift-share analysis as a derivative of the productivity or technology component in a modified neo-classical model of labour growth. Unlike the method proposed by Casler in [13] above, the shift-share analysis may now be decomposed broadly into two effects on employment change. The first is that which results purely from changes in the demand for regional output given the constant elasticities, and the second is that which is created by the regionally-specific productivity growth.

The results obtained for London through this extension of the Casler method are presented next.

8.2.4 Results from the application of the shift-share extension to the London case.

The results of the estimations of the elasticities of employment with respect to output are shown in table 8.8 below.

Table 8.8 : Regression coefficients from estimation of the labour demand models.

	R^2	estimated elasticity (b_Q)	standard error	*t*-statistic
Food, beverages and tobacco	0.978	0.397	0.102	3.88***
Textiles	0.993	0.593	0.073	8.11***
Wood	0.980	0.592	0.053	11.23***
Paper and printing	0.994	0.276	0.065	4.26***
Chemicals and fibres	0.987	0.111	0.060	1.94*
Rubber and plastic	0.977	0.687	0.083	8.23***
Non metallic mineral products	0.983	0.250	0.066	3.78***
Metals	0.989	0.228	0.065	3.51***
Machinery	0.983	0.488	0.084	5.81***
Electrical and optical	0.992	0.819	0.078	10.54***
Transport	0.987	0.102	0.067	1.52*
Other manufacturing	0.979	0.500	0.071	7.10***

(*** - t significant at 0.01, ** - t significant at 0.05, * - t significant at 0.1)

The R^2 values presented in the table show that in all cases the explanatory power of the model was high. Fixed effects models do tend to increase the value of the R^2, however even with the omission of the regional dummy variables, R^2 were not less than 0.76 for any industry and this is simply because the relationship between regional employment and output is so strong. However, it is really the estimated beta coefficients (b_Q) which are of interest in the present context. In all cases the estimated coefficients are positive and less than 1.0. Intuitively this would appear to make sense, in that a change in the number of people employed in an industry coincides with a change in output in the same direction but of lesser magnitude. This is consistent with the neo-classical model of labour growth set out in [14] above, where output growth is viewed as only one factor in changes in the demand

for employment. The t-statistics show that for all but two industries, the estimated beta coefficients were significant at the 0.01 level, and the standard errors are fairly low suggesting relatively precise estimates. For the chemicals and transport industries however, the estimated beta coefficients were statistically significant only at the 0.1 level, and it would appear from the examination of scatterplots that this is simply due to a less direct regional correlation between employment and output within these sectors.

Table 8.9 shows a modified shift-share analysis of manufacturing employment change in London compared with that of Great Britain over the 1984 to 1991 period, utilising the estimated elasticities. The shift-share indicates that London has lost jobs due to both a falling demand for manufacturing output and through productivity growth. The regional share component indicates that on the basis of national output growth rates for all manufacturing, and given the estimated elasticities of employment with respect to output, employment in London's manufacturing would have increased by 2.6%. However, the combined effects of the differential and structural components, was to reduce employment by -8.4%. Again assuming no productivity growth over the period, solely on the basis of the industrial structure of London, and given the elasticities of employment with respect to output a decline in employment of -0.2% would have been expected over the period. Thus, as regards London's output performance, it seems that the structure of industry cannot account for a poor output performance, but that competitive effects have been dominant in this respect, creating a -8.3% decline in employment irrespective of productivity growth. In other words, it would seem that London is not generally a favourable location for manufacturing output growth and this has been an influential factor in employment decline.

However, the productivity component is clearly the most influential of all, destroying over 30% of manufacturing jobs in the capital. In all manufacturing sectors within the capital less labour is being demanded over the seven year period. Particular industries contributing to productivity growth include those in which London's output is becoming increasingly specialised such as food, beverages and tobacco, paper and printing, and chemical manufacturing. However, also prominent in this respect are electrical and optical goods and metal manufacturing. In sum, the indication from the shift-share analysis is that

Table 8.9 : A modified shift share analysis of manufacturing employment change in London compared with the performance in Great Britain, 1984-1991.

	regional share $(\alpha_{ij} Q^*) E_{ijQ}$	differential $(\alpha_{ij} [Q^*_{ij} - Q^*_i] E_{ijQ})$	structural $(\alpha ij [Q^*i - Q^*] E_{ijQ})$	productivity $\alpha_{ij} (X^*_{ij})_{P,Q}$
Food, beverages and tobacco	0.28	-0.40	0.22	-4.74
Textiles	0.28	-1.03	-0.67	-1.58
Wood	0.05	-0.30	0.05	-0.33
Paper and printing	0.37	0.08	1.04	-5.22
Chemicals and fibres	0.05	0.18	0.05	-3.42
Rubber and plastics	0.12	-0.81	0.56	-0.90
Non metallic mineral products	0.03	-0.18	-0.08	-0.91
Metals	0.14	-0.41	-0.18	-4.32
Machinery	0.24	-1.13	-0.32	-2.19
Electrical and optical	0.87	-3.70	-0.90	-5.22
Transport	0.04	-0.18	0.01	-2.41
Other manufacturing	0.16	-0.40	0.05	-2.15
Total	2.64	-8.28	-0.16	-33.39
Total shift	-8.44			
Actual change	-39.19			

employment loss in London manufacturing has been created partly by a fall in the demand for manufactured goods produced within the capital, but to a much greater extent by increased labour productivity. Furthermore, as regards the fall in the demand for manufactured goods, it would seem that this has not been influenced to any great extent by the compositional mix of industries within London.

It is worth considering how the results for London compare to other regions of Britain. Table 8.10 below, shows results from the labour demand shift-share model for standard regions compared with the performance of Great Britain for the period 1984 to 1991.

Table 8.10 : Results from a labour demand shift-share analysis of employment change in the standard regions compared to the performance of Great Britain, 1984 to 1991 (percent).

	employment consequences of output change				
	regional share $(\alpha_{ij}Q^*)\,E_{ijQ}$	**differential component** $(\alpha_{ij}\,[Q^*_{ij} - Q^*_i]\,E_{ijQ})$	**structural component** $(\alpha_{ij}\,[Q^*_i - Q^*]\,E_{ijQ})$	**total output effect**	**productivity effect** $\alpha_{ij}\,(X^*_{ij})_{P,Q}$
East Anglia	2.64	2.63	0.05	5.32	-17.13
East Midlands	2.74	2.77	-2.27	3.24	-12.63
London	2.64	-8.28	-0.16	-5.80	-33.39
North	2.40	2.49	-1.03	3.86	-11.26
North West	2.50	-2.13	-1.00	-0.63	-14.63
ROSE	2.69	-3.14	-0.47	-0.92	-19.50
Scotland	2.59	0.84	-1.32	2.11	-14.76
South West	2.57	1.77	-0.26	4.08	-16.85
Wales	2.46	10.56	-0.65	12.37	-8.62
West Midlands	2.30	3.40	-0.77	4.93	-16.28
Yorkshire and Humberside	2.43	2.63	-1.37	3.69	-10.50

Columns two to five show the employment consequences of output change assuming that no productivity growth occurs over the period. Considering firstly the total output effect

(column five), it can be seen that in all but three regions, employment growth would have been generated by output growth, given the estimated elasticities and assuming zero productivity growth over the period. In these regions, any employment loss has not coincided with output loss, and thus jobs are being shed without any evidence of 'downsizing' in the manufacturing sector. The results for London, ROSE and the North West region however, indicate that a certain proportion of employment decline can be attributed to poor output growth in the manufacturing sector. Again assuming no productivity growth over the period and given the estimated elasticities, output change would have led to a decline in employment of approximately -1% in ROSE, -0.6% in the North West, and just under -6% in London. These comparative figures highlight the poor output performance of the London manufacturing sector over the 1980s, and show that of total manufacturing job loss in the capital over the period, approximately 15% can be attributed to a loss of output irrespective of productivity growth.[5]

Columns three to five break down the employment consequences of output growth in to three shift-share components. The regional share component is less interesting here simply indicating the regional employment share weighted effects of national output growth in total manufacturing. There is very little difference between the regions in the regional share effect, creating an employment expansion of approximately 2.5% in all regions. It is worth concentrating on the differential and structural effects. London compares badly to the other regions with respect to differential effects. The London value of -8.3% is much higher than for ROSE (-3.14%) and for the North West (-2.13%); which were the only other regions with negative differential shifts. The implication is that in these three areas industrial structure cannot explain employment decline, but rather that some competitive effects have induced output to fall creating a decline in the labour demand, and this is most pronounced in the case of London. In the remaining eight regions, employment growth would have occurred assuming no productivity growth on the basis of competitive effects.

[5] The results presented are for the 1984 to 1991 period and so clearly include the impacts of recession. A separate analysis for the 1984 to 1987 period, would show employment generation from manufacturing output growth in London. However, London's output expansion over this period was at slower rate than for any other region, indicating that even in periods of growth, London has performed relatively poorly.

Interestingly, the structural component has a negative influence in all regions with the exception of East Anglia, and here it was of minor importance. This is a surprising result. It indicates that the structure of industry in ten of the eleven regions has not been favourable in terms of output growth nationally, and that this has led to reduced rates of employment generation. With the exception of the East Midlands however, structural effects have been more than overshadowed by the strength of the regional differential component. Comparing London's structural effect to other regions shows that London's decreasing labour demand cannot be explained by an adverse employment structure.

The final column in the table shows the productivity effect. In all regions productivity has destroyed jobs over and above the effects from output change. Wales however, is an interesting case. Here, productivity trends have destroyed 8.6% of jobs, but due to the scale of output growth over the period the region still managed to increase employment over the decade. Wales can be differentiated from the other regions in that both output and employment are increasing, while productivity growth is still taking place. The table shows that in another seven regions, any employment growth that would have been expected on the basis of output change, assuming zero productivity change, has been more than counteracted by increased productivity. While in the remain three regions, productivity growth has contributed to employment decline along with output decline, although London really stands out in this respect. London has lost over 33% more jobs than would have been expected given output change and the estimated elasticities of employment with respect to output. In other words, this is pure jobs shedding which cannot be directly explained by a decline in the capacity of London industry.

8.2.5 Discussion.

The analysis presented above demonstrates that the output performance of London's industry has been poor relative to all other regions, and that this has contributed to manufacturing jobs loss in the capital. However, it has also been shown that productivity growth is an extremely important variable in explaining reduced demands for regional manufacturing employment. In many regions, 100% of aggregate job loss can be explained

not by falling demand for regional manufacturing output, but by some productivity effects. London however, has experienced by far the most extreme productivity effect. Unlike other regions, London's manufacturing employment cannot be purely explained by productivity growth because falling demand for the capital's industrial output has also played an important role. Nonetheless, the scale of jobs lost through productivity effects in London, over and above those of output change, is unmatched in any other region in the country. In 1984, London's average productivity in manufacturing was below that for the nation as a whole and higher than only the East and West Midlands regions. By 1991, London's manufacturing industry was operating at a higher level of average labour productivity than any other region in the country, and its productivity growth was exceptional relative to the other ten areas. The fact is that London industry may be performing badly relative to the regions, but change has happened in such a way as to create radical shifts in the relative position of London industry in labour productivity terms.

How can these trends in the capital's manufacturing be explained? The figures do not indicate underlying processes, but clearly show that London's employment change over the 1980s can only be understood through the dual processes of manufacturing decline and exceptional labour productivity growth. In addition to possible productivity effects that may arise through the increased use of capital and technological change, the concept of increasing specialisation through selective out-migration and closure offers a plausible explanation for the London trends. The hypothesis that London's industry is becoming increasingly highly waged, more productive in relation to labour input, and perhaps involved in higher value added activities, would explain why the industrial base is actually shrinking while the productivity of labour is continually rising. The issue of continuing comparative advantage for manufacturing in London has tended to be overlooked in previous research, yet the above results indicate that it may well be important in understanding London's manufacturing change and the type of industry that exists in London today. Unfortunately, the data do not permit this aspect of change to be examined in any detail. Hopefully, the analysis presented in the above section has made clear that productivity growth has been an extremely important process underpinning London's

industrial change, and that London's exceptional rate of manufacturing job loss cannot be explained solely by a decline in productive capacity within the capital.

A final point worthy of discussion relates to the usefulness of the modified labour demand shift-share model. The method developed above is a comparative one which puts all regions on an even surface in terms of the employment consequences of output change, and allocates remaining employment change to a region specific 'productivity' component. The proposed method does not offer a great deal of explanation for underlying trends, however, it does allow the analyst to broadly distinguish the employment consequences of output change from those of productivity change. In this way, two fundamental mechanisms behind employment change - changes in the demand for output and in the technological characteristics of production, and the spatial manifestations of these mechanisms - are included in the modified shift-share model. Thus, labour productivity is not examined simply in terms of change in the amount of output per employee. Instead, productivity growth over time, as expressed through job loss, can be compared to the overall output growth performance of a region, and this may be of considerable use in regional analyses of employment change.

8.3 Conclusions.

This chapter set out to perform two functions. First, to consider influences on wages and average levels of labour productivity that may have arisen through change in the compositional mix of London's industries; and second, to demonstrate the employment consequences of manufacturing labour productivity growth in the capital. The chapter has raised some important points. It has been shown that the structure of London's industry relative to the nation cannot provide a sole explanation for higher and increasingly higher wages, nor for higher levels of productivity and productivity growth. London industry simply faces very different structures of wages and average labour productivity than the nation as a whole. The data used in this chapter have not allowed a detailed investigation of these issues. However, they have shown that dual processes appear to be affecting the capital. On the one hand London has experienced an absolute decline in the productive

capacity of some manufacturing industries, on the other, industrial specialisation and exceptional increases in wages and labour productivity have occurred in manufacturing. The evidence presented in this chapter points towards a process of selective closure and out-migration in London manufacturing which has led to an increasing functional specialisation of London industry characterised by higher skills, higher wages, and higher productivity. These are characteristics which might be intuitively associated with sectors which may be able to offset the higher operating costs of the capital with the economic benefits which accrue from a London location. This issue is returned to in the conclusions which consider the viability of this explanation in relation to evidence generated elsewhere in the thesis.

The second part of the chapter was primarily orientated towards demonstrating the importance of productivity growth for manufacturing employment in London. It was shown that while manufacturing job loss can be associated with a decline in the demand for manufacturing output, productivity growth has occurred at an exceptional rate in London and is an extremely important process underpinning employment change. Again, the analysis of part two highlighted the importance of the coincidence of decline and productivity growth in London's manufacturing change over the 1980s.

In important ways, the findings of this chapter support the argument presented in chapter six that London's experience of industrial change is not simply one of decline. London's manufacturing sector has experienced a more dynamic and complex change than indicated in employment terms alone, and today printing and publishing, food, drink and tobacco and the chemical industry comprise over 56% of London's manufacturing output, with all three sectors expanding output over the decade.

Detailed explanations for the London experience, however, are more difficult to produce using existing published data. Indeed, a final conclusion from this chapter must be that SIC categories simply do not provide an adequate taxonomy to explore the intricate nature of London's manufacturing change. Even at the most disaggregated levels, the SIC would be a limited tool in this respect because it only describes industry in terms of its end product. In

London, it may be that it is the types of occupations, and the nature of the actual work being undertaken in manufacturing establishments, that holds the key to understanding some of the trends and processes outlined above.

It has not been the purpose of this thesis to consider the detail of London's industrial change, focusing instead on questioning the broader processes affecting manufacturing in the capital. However, the conduct of the research raises a number of important un-answered questions, and in the next chapter these questions, and some possibilities for answering them, are discussed in relation to the findings of the thesis as a whole.

Chapter 9 : Conclusions.

9.0 Introduction.

Chapter nine offers some conclusions on the main findings of the thesis and reflects upon the most important themes developed in the research. The thesis results are summarised, and the pursuit of employment protection policies by borough LPAs are considered in light of the evidence on labour productivity growth. This chapter also locates the thesis research within a wider context, highlighting contributions to existing interpretations of urban and regional manufacturing change. Finally some limitations of the research and future questions that arise from this study are discussed.

9.1 Summary of findings.

The first three chapters of the thesis provided an underlying theoretical and substantive context for the empirical research. Chapter one introduced the thesis research and provided an historical basis for the study, reviewing previous literature on the industrial development of London and on the decline of manufacturing that has taken place in the capital since the early 1960s. Chapter two reviewed some of the dominant theories of urban economic change that have featured in the geography and planning literature, emphasising perspectives which have focused on intra-regional processes and particularly those which have attempted to explain urban industrial change. The chapter showed that the dominant theme within this literature has been to emphasise that urban manufacturing changes in only one direction - that of decline. It was then argued in chapter three that there are good reasons to believe that land use planning regulations may be able to influence, or at least respond to, urban manufacturing employment loss. Examples of previous studies of employment protection policies were given and the theoretical relevance of these policies was outlined, particularly with respect to two of the most prominent contemporary theories of urban manufacturing decline - the space constraint and crowding out hypothesis.

The empirical work of the thesis was divided into five separate chapters. Chapter four reviewed sectoral and spatial trends in London's manufacturing employment change

over the 1980s. It was shown that employment decline has affected all manufacturing sectors in the capital, and that it has been largely consistent over time and across the boroughs. The phenomenal scale of job loss that took place in London was emphasised through comparisons with the nation, and the results were largely consistent with the theme of absolute urban decline developed in the theoretical perspectives reviewed in chapter two.

Chapter five explored the ways in which local authority land use planning controls have been used to influence manufacturing employment change in London over the 1980s. It was shown that many London LPAs had developed policies with the explicit intention of protecting manufacturing jobs, and the various types of policies were reviewed and the degree of importance attached to them discussed. Interestingly, it was found that the majority of LPAs had not considered the use of employment protection policies to have been successful. The London authorities argued that the forces underpinning employment change were largely outwith the scope of planning control and that planning policy could realistically only have a marginal influence on outcomes determined by the 'market' and by processes which were though to be operating at levels above the local. In addition, it was found that many LPAs had developed planning policies which sought to channel or direct the location of new manufacturing developments. Thus, in contrast to the discussion of the previous chapter, the possibility emerged that London's manufacturing change may be slightly more dynamic and not just a broad process of decline. The general implication was that manufacturing change in the capital was perhaps more complex than previous theories advocated, or the employment analysis of the thesis had suggested. The ultimate conclusion of chapter five was that this potential complexity deserved attention and that in this respect it was thought more fruitful to explore different dimensions of change in London's manufacturing and then reflect on planning implications, rather than to continue with a pure focus on policy and to seek explanations in a secondary fashion.

Chapter six developed this theme, exploring aspects of manufacturing change in London related to land use and floorspace, firm entry, output, and productivity change. A quantitative analysis of planning policy was thought inappropriate and not attempted, however, the chapter did turn to reflect on the two theoretical perspectives which

provided sound reasons for believing that land use planning controls could have been important in urban manufacturing employment change. The chapter argued that the space constraint and crowding out hypotheses did not appear to offer single viable accounts of manufacturing change in London. Indeed, the results presented in chapter six showed some very surprising trends. Exploring floorspace and land use aspects of change, it was found that manufacturing floorspace in London had been declining at a much slower rate than employment and that as a result employment densities were increasing. Through an analysis of London development control data it was shown that planning applications were still being submitted for manufacturing development in London, indicating in accordance with the results of chapter five, that London's experience of manufacturing change should not be conceived in terms of absolute decline.

Chapter six moved on to consider aspects related to firm entry and output change in London's manufacturing. These two indicators showed radically different patterns of change to those generated on the basis of employment data, indicating that at certain times over the 1980s London's manufacturing had actually expanded output and that the numbers of firms had grown. Change in London's manufacturing was analysed further by bringing together the indicators of employment and output into a measure of average labour productivity. It was shown that over the 1980s labour productivity in London's manufacturing sector had grown at almost twice the rate of the nation, and that manufacturing industry in the capital now operates at a considerably higher level of labour productivity than in the nation as a whole. The chapter went on to demonstrate the potential importance of productivity growth for manufacturing employment at the borough level, and argued that to view London's manufacturing change as an experience only of decline, as in the space constraint and crowding out hypotheses and other theoretical perspectives outlined in chapter two, could not explain the trends and counter-trends that had taken place. The trend of labour productivity, it was argued, had the potential to explain or at least reconcile the different aspects of change in London's manufacturing.

The observation of higher and increasing labour productivity in London raised a number of important issues and research questions. It was argued that further insights into the

factors underpinning productivity growth could improve an understanding of the relationship between urban planning controls and manufacturing employment change, and also provide explanations for the nature of manufacturing change in the capital. For these reasons, chapters seven and eight went on to examine aspects of labour productivity in detail.

Chapter seven sought to investigate why London's manufacturing was now operating at such a high level of labour productivity relative to the nation. The chapter introduced a body of literature which has been concerned explicitly with the factors underpinning spatial differences in productivity levels. Much of this research had focused on explaining why cities tended to exhibit higher average labour productivity in manufacturing, and empirical work had emphasised the importance of agglomeration effects and had determined systematic relationships between city size and higher productivity. This literature was particularly relevant because it was consistent with the findings of the thesis, but it was also important because it contrasted with the types of analyses and conclusions that had been reached in much of the geographical literature reviewed in chapter two. In addition, the spatial productivity research had developed a useful methodology to examine directly spatial productivity differences and it was thought that this could be applied to the British case.

The empirical investigations of chapter seven involved the use of econometric methods to estimate the significance of a set of explanatory variables on average and marginal labour productivity differences across the counties of Britain for the year 1991. The econometric models were specified within theoretical frameworks provided by standard aggregate production functions. The models generated some interesting results. In contrast to expectations, it was found that London did not appear as a unique location in productivity terms relative to other counties in the sense that the explanatory variables included in the models tended to explain London as much as any other area. It was found that agglomeration effects, both localisation and urbanisation, were insignificant factors in explaining spatial differences in average labour productivity. Effects that were found to be important included the particular structure of industry in an area, the proportion of part-time employees, and the skills of the manufacturing labour force. However, the most important factor appeared to be the ratio of capital to labour. The

chapter showed that in London capital expenditure had been increasing at a much higher rate over the 1980s than in the nation as a whole. It was also argued that while payment to capital per employee was much higher in London's manufacturing than elsewhere, as a proportion of total output, payment to capital was not so significantly different than the county average. The main factor differentiating London from other areas was that so few people were employed, creating an extremely high capital to labour ratio which captured the 'London effect', and thus in turn, provides one explanation for the insignificance of the London location variable in the productivity model.

Further, it was shown that while London manufacturing employs relatively few people, wages in manufacturing are significantly higher. The chapter demonstrated that while London may be more productive in terms of the number of employees, this is not the case in terms of labour costs. A second model developed in the chapter showed that the marginal productivity of labour was significantly influenced by the structure of industry, the skills of the labour force, and by the size of any county. The implication appeared to be, that in addition to being located in a large high-waged city, London's industry was highly skilled and highly paid, and that these characteristics, particularly with respect to the changing structure of London's manufacturing, could provide a good explanation for the phenomenal rate of labour productivity growth experienced in the capital.

Chapter eight turned to look at productivity change. It attempted to develop the hypothesis that London's industry had moved towards higher wage and higher productivity industries. The chapter was divided into two parts. The first examined the structure and specialisation of London's manufacturing and the second developed a model which isolates the employment effects of productivity growth; and results were presented for London.

Part one first addressed the issue of industrial structure. It showed that, in terms of both wages and labour productivity growth, London's change could not be explained on the basis of structural factors alone. London's industries faced very different labour costs than manufacturing in the nation as a whole, and likewise, labour productivity change could not be explained with respect to industrial structure given national sectoral productivity growth. This part of the chapter next examined London's compositional

change in terms of the two components of productivity growth - output and employment change. It was shown that London appeared to have experienced dual processes of change in manufacturing over the 1980s. On the one hand, specialisation in London manufacturing output was indicated to some extent, and on the other, relative and absolute decline in productive capacity characterised other manufacturing sectors. However, the data used in the chapter did not permit a detailed analysis of these issues, and one of the main conclusions of part one was that analysis of change in more detail would have to look beyond the existing categories of the SIC.

Part two developed a method to explore the employment consequences of productivity change. The results for London highlighted the relatively poor output performance of the capital's manufacturing and showed that jobs had been shed due to an overall decline in productive capacity. However, the results also demonstrated that productivity growth could explain the majority of manufacturing employment losses in London over the 1984 to 1991 period, and that the employment consequences of productivity growth, over and above those created through output change, were exceptional in London relative to the other regions of Britain. Again, the analysis highlighted the dual trends of decline and productivity growth, and in conclusion it was argued that selective closure or out-migration, and the continuing comparative advantage of a London location for some sectors of manufacturing, are processes which hold potential to explain these trends.

Having summarised the main thesis findings with respect to each chapter, it is important now to emphasise the main themes that arise from the thesis as a whole and by way of concluding, to highlight the substantive contributions of the research. This is undertaken in the following three sections. First, the implications of the research for understanding the nature of manufacturing and manufacturing change in London are outlined. The land use planning implications of productivity-led employment decline are discussed next, relating the perspectives developed about London's manufacturing to planning policy for the protection of jobs. Section 9.4 then discusses the wider implications of the thesis, particularly with respect to existing theories and analyses of urban economic change. Finally, some limitations of the thesis research are discussed, and questions that remain unanswered and some future research issues are outlined.

9.2 Labour productivity and manufacturing change in London.

Manufacturing employment has declined severely and consistently in London over the 1980s, as it has since the early 1960s. Previous studies of London's economic change discussed in the thesis have reported this trend, and have often focused on attempting to explain job loss through processes of decline which are thought to have affected the capital in a most acute way. This thesis has taken a different approach to the issue of London's job loss. It has examined a variety of different economic indicators to produce a somewhat more complex and dynamic account of manufacturing change than has been found in previous studies. It is the contention of this thesis, that to focus on job loss alone, and to explain this trend only in terms of processes of decline, is an over-simple view of manufacturing change in London. Such a view is likely to miss many of the important processes that underlie such change, and may even lead to a mis-interpretation of what has actually been happening to London's manufacturing.

The thesis has shown that despite the exceptional rate of job loss many areas of London have experienced a net entry of manufacturing firms over the 1980s, and that in certain years of the period examined, manufacturing output in the capital has actually expanded, and quite significantly in particular industries. The point is that much of the evidence presented has shown that manufacturing firms still want to be located in London, and furthermore that the output capacity of manufacturing is not in terminal decline. The thesis does not dispute the fact that manufacturing employment in the capital has been shed at a remarkably fast rate over the 1980s, but emphasises that job loss does not equate to a loss of industry per se, and that a more accurate account of London's manufacturing change has to reconcile trends and counter trends within a framework which is able to recognise processes of growth and decline and is able to produce a more dynamic account of change.

The thesis focused on the observation of high and increasing labour productivity in London's manufacturing, and argued that it is through an examination of change in this respect that inconsistencies and contradictions in evidence of change may be understood. The scale of productivity growth in the London manufacturing sector over the 1980s is an extremely important and surprising characteristic of change. The thesis

has shown that, while labour productivity has grown throughout the nation in manufacturing industry, London stands out in this respect, being able to shed vast proportions of employment while, excluding recessionary periods, holding steady or declining slightly in output terms. Such was the productivity growth in London over the 1980s that it transpires that manufacturing in the capital now exhibits a higher rate of average labour productivity than in the nation as a whole, or indeed, than in any other region of Britain.

Evidence presented in the thesis has indicated reasons which may explain these aggregate trends. It does not appear that high labour productivity in London is directly associated with the simple fact that London is a big city or with localisation effects as captured in traditional concepts of agglomeration economies. Instead, it would seem that it is characterised by a high wage and highly skilled manufacturing sector and with the increased use of capital. The overall labour cost of manufacturing in London is not significantly different than the nation as a proportion of total manufacturing output. In this respect it is perhaps not be surprising that London's manufacturing employs so few people. The thesis has not been able to explore every variable that could potentially influence labour costs, though it would seem in addition to factors that arise from the use of capital that the size of London, the skills of the labour force and the types of industries that now exist in the capital are important.

This leads on to the related question of how high levels of labour productivity equate with 'efficiency' in manufacturing production. Labour productivity is often used as an index of economic competitiveness or efficiency, particularly at the national level. However, the results for the London manufacturing sector suggest that this interpretation may not be helpful. One issue raised by the research is that one of the most effective ways to increase urban manufacturing productivity may be through the complexities and dynamics of decline. It may be that more labour intensive industries, activities, or even establishments, are closing down or moving from the capital, leaving behind a 'hard core' of functions which benefit from the operating environment of London and are characterised by high skilled, high waged, and perhaps high value-added activities. If it is true that London has somewhat higher operating costs for manufacturing activities as suggested in the cost-based explanations outlined in chapter

two, then this concept of selective out migration or closure provides a viable explanation. Industries exist in London only if they can offset the higher costs of the capital with the benefits offered, but these sectors are not necessarily more efficient, simply different. A parallel may be drawn in this respect with the concept of profit-cycles put forward by Markusen (1985) as discussed in chapter two. Markusen notes that in a period of negative of profits in a particular industrial sector "the closure of the oldest plants raises the average degree of mechanisation, which will show up as worker productivity increases" (Markusen, 1985, 38). Clearly, this comment is intended to explain an entirely different situation and has no direct bearing on cities, however, the common ground is in the concept of productivity growth induced through decline from the closure or relocation of older and less productive plants.

The thesis has presented no direct evidence of this detailed processes taking place. To do so, would necessarily have involved analysis at the firm level and it was not the intention of this research to produce such a study. However, much of the analysis conducted points towards this interpretation of manufacturing change and particularly with regard to the identification of the dual processes of growth and decline in different empirical investigations. It is the identification of these types of broad trends that has much to offer the understanding of the nature of London manufacturing change, and of what type of manufacturing exists in the capital today. Previous studies have looked at decline and closure of London's manufacturing and, while the global city interpretation of London's manufacturing change did suggest that some selectivity may be occurring within overall decline, this process was awarded slight regard and was seen in essence as an issue of minor importance. Yet, in labour productivity terms, it would seem that it is the issue of which sectors can still retain a comparative advantage in London that may be the critical process of change leading to the type of manufacturing that London has today which is characterised by high waged, highly skilled, and high productivity sectors.

As mentioned in chapter six, there are other factors which this thesis has not examined which may be important in contributing to increased labour productivity in London. It maybe that London manufacturing firms are now using labour in a different way and the rationalisation and intensification of labour inputs in manufacturing may have been

important. Another possibility is that productivity gains may have been created through an increased propensity to contract-out service functions which were previously provided in-house in manufacturing. In London, the existence of a highly specialised and developed service sector perhaps offers more scope for this than elsewhere. Finally, and as discussed in full in section 9.5 below, a note of caution should be stressed regarding the SIC and many of the data sets used in this thesis. The SIC provides an industrial taxonomy which is constructed with reference to the end of product of an industry, and is not open to interrogation about the nature of the work being conducted. In relation to the issue of manufacturing labour productivity, it may be that to some extent the London figures are skewed by the presence of activities which are classed under manufacturing but are actually involved in more service sector -based activities. The GVA data used in this thesis do supposedly exclude non-production activities, however, it may be that in some cases this has not been possible. There is little that can be done to evaluate or change official published data sources, and problems such as this are a potentiality in any analysis of urban and regional economic change.

These are again much more detailed issues than this thesis has been able to consider, and could only be properly addressed through a firm level analysis. As discussed below, such a study would provide an important component of further research into labour productivity in London's manufacturing. This research has demonstrated and isolated the importance of productivity growth for London's manufacturing employment change. The interaction between output, wages and labour in London's manufacturing is of a unique nature, and provides a crucial component in understanding the exceptional rate of job loss that has taken place over the 1980s.

9.3 Land use planning implications of productivity led employment decline.

It is extremely difficult to isolate the employment consequences which may have arisen in London through the use of land use planning controls to protect manufacturing jobs. The thesis approached this issue in a direct fashion by surveying London's LPAs, and it was found that the majority of authorities did not believe their employment protection policies to have been successful over the 1980s. However, responses from the survey can only realistically relate the perspective of the LPAs and they certainly cannot

explain definitively why these policies have not been successful. This particular question was addressed in a more indirect fashion by attempting to uncover at least some of the empirical context within which the policies operate, providing a basis for exploring why policies are perceived as unsuccessful.

Despite the focus of much previous literature it has been shown in this thesis that London's manufacturing change does not simply involve the closure and migration of establishments. Most borough planning authorities have developed policies which seek to channel and guide the location of new manufacturing developments, indicating a continued demand for industrial land and premises in London. Planning applications for industrial use are still being submitted in London, and the number of manufacturing firms operating in the capital has declined only marginally over the 1980s. As regards planning for the protection of manufacturing jobs, the importance of this is that there appears to be a continuing justification for attempting to retain land and buildings in manufacturing use. The assertion that London is no longer a viable location for manufacturing industry is inaccurate and it is conceivable that the objective of retaining manufacturing uses could be realised in many cases. Crucially, the conventional view of London's manufacturing change cannot explain the lack of success in policy objectives.

However, the important point is that despite continuing demands for manufacturing land and regardless of the small net exit of manufacturing firms that has taken place over the 1980s, manufacturing jobs are still being lost at a most severe rate, and it is in this respect that LPAs do not believe that they have made a great deal of difference. The issue of London's high and increasing levels of labour productivity offers some explanation for the perceived lack of policy success. Employment decline in London has, to a large extent, been led by productivity growth, and it may be that only tenuous links that exist between job loss and land use change. In other words, LPAs may have been able to retain manufacturing uses by protecting industrial land, but given the scale of productivity growth that has taken place in the capital over the 1980s this does not imply that jobs will have been retained.

A useful way of looking at this issue is to view both labour and land as inputs to production. The demands for labour and land are both derived demands, dependent of

course upon the supply and price of each commodity, but also upon the demand that ultimately exists for manufacturing output. Employment protection policies attempt essentially to intervene in the land market with the hope of inducing labour market outcomes. However, the issue of labour productivity growth suggests that the derived demands for land and labour may be changing in ways which are to a large extent independent of one another, consequent upon the level of output, the technology under which manufacturing operates, the relative prices of factor inputs, and change in the nature of manufacturing itself. The retention of manufacturing land cannot influence the basic relationship between labour input and manufacturing output, which is itself constantly changing, and in the London case radically so.

The point being made is a simple one, however, evidence presented in this thesis has shown that in the London case it may be of critical importance as can be illustrated. In the most simple case, it may be that labour is being shed within existing manufacturing establishments. There are several reasons why this may happen including a fall in the demand for the output of this establishment, or as a result of relative gains that may be made through the reorganisation of labour inputs and the replacement of labour by capital. Many LPAs in the survey cited this broad type of job loss as being of the highest importance and yet it is precisely this kind of employment change that land use planning can have no control over. Another example of labour productivity change which could have far reaching implications for levels of labour and land demand could arise from the selective closure and out-migration of manufacturing industries. The possibility that there may be continuing comparative advantages arising from a London location for particular types of manufacturing activities has been cited as a strong explanation for the growth of labour productivity in the capital, however, it may also have important implications for land use planning intervention. It certainly is the case that LPAs cannot influence or control job loss which results from establishment closure, and many authorities made this point explicitly in their survey returns. It is also the case that LPAs have little control over the specific nature of manufacturing that remains or takes up land on earmarked sites, specifically with regard to changing labour demands. If a 'shake-out' has taken place in the London manufacturing sector over the 1980s leaving behind a more compact, higher skilled, and higher productivity sector, then there is little LPAs can do to protect jobs. They may have found that reduced labour and

possibly land demands have resulted while manufacturing output may not have changed to any great extent, but given the scope of intervention permitted under the planning legislation, authorities are at a loss to control these broad shifts in any meaningful way.

On a more general level, it seems that one of the main problems underpinning attempts to protect jobs through land use planning intervention may stem from the importance of the pricing mechanisms which influence derived demands and which may not be directly expressed spatially. The thesis has shown that total labour costs in London form approximately as large a component of total manufacturing output as they do in other counties of Britain. London's manufacturing may simply have a much smaller level of labour demand in terms of number of employees because workers are paid such considerably higher wages. Empirical investigations have shown that this higher wage can be explained by factors such as the size of London, the skills of the workforce and the structure of industry, in other words, primarily factors outside the realms of planning control. The shift of the London manufacturing base towards a higher skilled and highly paid manufacturing sector with a high capital to labour ratio may in turn be related to selective closure and out-migration effects induced through the higher operating costs in the capital, and again land use planning has little control over these pricing mechanisms and the change in the nature of manufacturing activities that they create.

The thesis has been concerned with uncovering the broad context within which employment protection policies operate, and draws out policy implications on this basis. It has not explored specific examples of labour productivity implications for land use planning policy. However, it does seem that productivity growth in the London manufacturing sector provides sound reasons for why job loss is not directly expressed in land use change and thus why planning policy can only achieve limited success. Previous interpretations of London's manufacturing change would perhaps suggest that the lack of policy success derives only from the fact that the closure and out-migration of manufacturing establishments are outwith the scope of planning control. While this is true, the argument presented in this thesis differs because it stresses that London's manufacturing change is not just one of decline but is much more dynamic and has not necessarily involved a major scale of firm and output loss. Chapter eight has shown that employment decline in London has been more strongly influenced by labour

productivity growth than it has by a fall in the demand for manufacturing output. It must be that this phenomenal rate of growth in London's manufacturing labour productivity, and its unique importance within overall employment decline, has had a fundamental influence on the ability of LPAs to protect jobs. Indeed, this argument is consistent with the responses of the London LPAs described in chapter five, where it was found that the fundamental bases of job loss were not perceived as planning issues, but were thought instead to be based in processes largely directed by the 'market'.

That is not to say that the protection of manufacturing land is a futile task, nor that labour productivity growth offers a single explanation for the perceived lack of success of employment protection policy. Evidence presented in this thesis suggests that demand still exists for manufacturing land in London and that firms still wish to be located in the capital, and in this sense justification still exists for earmarking sites for manufacturing purposes because it is still a viable land use. In a recent report published by the GoL (1996) the present author developed an input-output model of the London economy which showed that the London manufacturing sector was strongly linked into London's expanding service sector and that substantial opportunities for growth existed in particular manufacturing industries. Where the issue of labour productivity comes into play is in terms of the expectation of labour demand from retaining manufacturing uses, and the argument of this thesis is that expectations have not be realised over the 1980s and that labour productivity growth must play a critical role in this respect. Thus, for employment protection policy, the importance is to understand that London's manufacturing is increasing labour productivity, it is shifting labour demand in terms of the skills required, and it is now much higher waged. These characteristics of changing labour demand may be in conflict with the employment objectives of many London authorities which were outlined in chapter three, particularly in terms of the redistributive effects of employment protection. Increasingly, authorities may have to consider other options to help the less skilled residents into permanent employment.

9.4 The wider context of the research findings.

Individual findings within this thesis are relevant to a range of previous research, as may be evident from the scope of literature reviewed in different chapters. However, in the

opinion of the author, it is the observation and analysis of labour productivity which may have some wider implications for present and future research into geographical differences in economic and employment change. The following section relates the relevance of this aspect of the thesis to some contemporary and possible future issues in urban and regional studies.

The first point worthy of consideration is how the focus on labour productivity differentiates the present research from the types of urban economic analysis discussed in chapter two. In one respect, the research findings could be aligned with the cost-based explanations of urban deindustrialisation. The thesis has shown that high labour costs in London are likely to have been critical in influencing reduced demands for labour and has suggested that higher operating costs in the capital may have been instrumental in creating a selective process of decline. However, the important point in this thesis is that factor costs and inputs are considered in relation to output and thus in terms of labour productivity, and in this way a strong distinction is drawn between the influence of ultimate and derived demands in employment change. Many previous analysis of London's economic change, including cost-based approaches, appear to have confused employment decline with a loss of industrial activity, attempting to explain job loss through processes of decline and ignoring the importance of how the output of industry, or ultimate demand for industrial produce, is actually changing in relation to factor inputs. It has been shown here that there is an important difference between jobs that are lost through output change and those which are shed as productivity grows, and since levels of productivity are spatially differentiated, the exclusion of this variable may represent an important deficiency of previous analyses.

It is widely recognised that the choice of indicator used to examine any economic change will strongly influence any conclusions reached about underlying causal influences. The examination of geographical differences in labour productivity is only one way of approaching spatial economic analysis, however in some important respects it may be particularly useful. Some of the most fundamental theories of economic geography reviewed in this thesis could be usefully examined in light of productivity changes. For example, a recent study of change in the London economy over the 1980s showed that when output and employment are considered together spatially in a measure

of productivity, even the usefulness of basic concepts in economic geography such as deindustrialisation and tertiarisation can be challenged because these types of broad definition simply do not capture the complexities and contradictions inherent in spatial economic change (Graham, Spence, 1995).

In the context of this thesis, one of the most important potential contributions that could arise from a comprehensive spatial study of labour productivity relates to the observation of the urban-rural employment shift, and the general finding that urban areas are the focus of deindustrialisation. As shown in chapter two, urban-rural differences have formed a major preoccupation in the analysis of intra-regional employment change. However, if it is the case that labour productivity is spatially differentiated, and not just for reasons of industrial structure, then this has to be taken into account in exploring the urban-rural distinction. While the thesis has shown that London stands out from the other British conurbations in its extremely high level of manufacturing labour productivity, it may be that in other empirical contexts, for example across the European Union, urban productivity could provide a vital component in the explanation of urban and rural differences in industrial employment change. This point may also be relevant to the service industries. Graham and Spence (1995) have shown that high levels of productivity and productivity growth characterise London's service industries as much as they do manufacturing. In the specific case of London, the point is that job change has to be understood in terms of labour productivity growth as well as that created through output change, and should not be simply categorised as a poor performance relative to the nation. It may be that this type of observation could be extended across the urban hierarchy, and that what is really being highlighted in the urban rural shift is a broad difference in labour productivity generated through differences in costs and the nature of the specific activities that take place in each broad area.

This underlines another important contribution that could be made through an explicit focus on labour productivity change in spatial economic analyses. As regards the urban economy in particular, higher rates of increased productivity not only offer a powerful explanation for experiences of job change, but also provide important indications of the types of activities that are now located in cities. In the London case, high wages and

high skills requirements characterised the manufacturing industries that exist there today. In other empirical contexts, a study of labour productivity in specific industrial sectors could indicate important differences in the actual activities which are being conducted in different locations.

Labour productivity has received little serious attention in the mainstream geographical literature. Largely it has been treated as a side issue, being viewed as simply one factor which can lead to employment decline. It is the contention of this thesis that geographical theories of structural economic change have paid insufficient attention to the conclusions reached in the economics literature about the importance of productivity change. This is despite the fact that international economists who have become interested in 'new' economic geography have been using the idea of productivity growth to explain the spatial concentrations of industry, which result in non constant and increasing returns to scale. (Krugman, 1991; 1993)

To attempt to understand the underlying causes of spatial differences in productivity in manufacturing and service industries, and to demonstrate what the implications of these differences are for regional development and competitiveness, and for national productivity advance, would add a valuable dimension to contemporary understanding of urban and regional economic change. Particularly because the issue of labour productivity is likely to take on even more importance in the future. Traditionally, it has been assumed that productivity growth is likely to be much higher in manufacturing than service industries. However, factors such as service sector output expansion and computerisation as well as the familiar processes of rationalisation intensification and capitalisation are likely to be increasingly important in creating productivity growth in the service industries. It is crucial to understand how productivity growth is achieved in different economic sectors in different locations, and to examine possible differences between 'positive' regional productivity growth in which output and productivity grow, and that which is achieved through economic sectoral downsising, in which productivity increases but output declines. At the urban and regional levels productivity growth may not be universally beneficial particularly if it is associated with rising unemployment and production decline, and these issues should be of interest in social science today.

Urban and regional analysis of labour productivity change should also have much relevance at a national level of economic concern. The rate of productivity growth can have extraordinary implications for the economic performance of nations, being thought to represent one of the main determinant of a nation's standard of living in the longer term. (Porter, 1990). For example, a growth in total national productivity of 1.5% per annum would cause a doubling of output after 47 years, with all factor inputs held constant. The issue of regional differences in productivity in service and manufacturing industries is of vital importance to the wealth creating capacity and regional economic equality of nation states. As has been pointed out in the case of the United States, "low interest loans, tax breaks, industrial recruiting, and other traditional tools of American economic development policy probably could not combine to have such a powerful effect on regional economic growth" (Gerking, 1994, 155). Furthermore, the reasons behind spatial differences in productivity may have important implications for national economic strategies because the competitiveness of regions in the international economy is dependent to a large extent upon productivity growth and the ways in which this growth is achieved.

In sum, the widespread introduction of labour productivity analyses into urban and regional studies would provide one means to examine the nature and causes of internal spatial economic differences and could provide an understanding of factors, both geographical and economic, which are important in national productivity performance, and in the competitiveness and employment performance of individual cities and regions. The present research has only examined labour productivity in one city and only in manufacturing industry. However in doing so hopefully it has shown how a focus on this aspect of change has much to offer the understanding of urban deindustrialisation.

9.5 Limitations of the research and questions that arise from the thesis.

To a large extent, the limitations of the thesis and the future research questions that arise are complementary. The thesis has examined London's manufacturing change, and the implications of land use planning controls in a fairly aggregate way and has not employed detailed case study methods. Aggregate analyses have been useful in isolating

important trends and in demonstrating the overall empirical context of industrial change in London over the 1980s. However, important limitations are associated with the type of enquiry used and it is the purpose of this final section to highlight some of the main research constraints and some major issues that ideally need to be explored.

In a practical sense, the use of aggregate data will always be fraught with difficulties of measurement and accuracy. It has already been mentioned in this thesis that the industrial categories of the SIC do not disclose the nature of actual activities being undertaken within any industry in any particular geographical location. As outlined in appendix one, this thesis has used the standard official definition of manufacturing as those industries which comprise divisions two to four of the 1980 SIC. However, it must be that many of the activities categorised as manufacturing, certainly in employment terms, are actually office-based jobs which are not truly involved in productive activity. In the case of London, the official definition of the printing and publishing industry as a manufacturing industry may be questioned from the point of view of there being similarities between many of these occupations and those of service sector orientated office activities. Likewise, many of the statistically defined service industries in the capital may in fact be 'off-shoots' of manufacturing or be dependent upon the manufacturing sector and this is not clear in the official statistics. This problem is compounded when different data sources are used together, and incompatibilities in classification will almost always arise. In essence, an aggregate analysis of secondary data sources allows for a degree of comprehensiveness and for the use of a variety of analytical tools that would not be available through primary research methods, however, it is at the cost of having to accept official working definitions rather than being able to create what may be more suitable taxonomies for the particular research question.

While this in itself is an important limitation of the present study, more profound constraints on the research arise from the basic choice of aggregate rather than detailed analysis. Many of the thesis findings, particularly as regards labour productivity growth, point towards processes which could only really be identified properly at the firm level. As with any research project, time and resource constraints necessarily fashion the limits of the analytical approach that may be adopted. This thesis has asked broad questions about labour productivity and its effects on London's manufacturing through

statistical methods, however, it is recognised that a qualitative firm level analysis would shed light on the specific ways in which manufacturing firms make labour productivity gains and how changes in the derived demand for labour actually work in detail.[1]

A final limitation of the research to be discussed lies in the scope of analysis of land use planning policy. The thesis has considered the views of LPAs on this issue, but if possible, it would have been equally interesting to seek the views of industrialists, and the users of London's manufacturing space on the influence of land use planning controls. This type of analysis could even be extended to seek the views of London's manufacturers on the importance of space constraints and crowding out, and how planning helps or hinders the availability of manufacturing space in the capital today.

On the basis of the discussion above, and given the wider context of this thesis as outlined in section 9.6 above, some central research questions which remain unanswered are as follows : What are the mechanisms at the firm level in London manufacturing which have induced such a phenomenal rate of productivity growth? Are there specific common characteristics which define manufacturing activities that continue to demand a London location, and those that do not? What are the factors that underpin the comparative advantage of a London location for manufacturing and what aspects of London are behind firm closure and relocation? How do manufacturers in the capital view the availability and appropriateness of premises, and do planning controls make a difference? Are higher rates of labour productivity growth common to the urban environment in general and if so why?

The ways in which the research could be developed further to approach these and other research questions may be briefly sketched out. Given additional time and resources it would be important to conduct firm-level investigations into the nature of manufacturing change in London. This could conceivably be done through two complementary approaches. First, survey based methods could be employed to provide case study evidence of the detailed mechanisms behind reductions in the demand for

[1] Interestingly, a recent paper which set out to explore employment generation in small to medium sized enterprises through firm level survey based methods did find labour productivity gains in selected London manufacturing industries. (North, Smallbone, 1995) On the basis of manager's responses they found that increased use of capital and more flexible use of labour were important processes underpinning increased productivity.

labour in different industrial sectors in different areas within the capital. Firms could also be questioned on specific aspect of planning policy. Second, using commercially available firm-level data, econometric investigations of labour productivity could be conducted for different industries in the capital to attempt to isolate the importance of location in returns to scale. The purpose of this second method would be to differentiate the types of manufacturing that may benefit from specific urban locations from those that do not.

For broader considerations, the present research could be advanced by moving the focus away from London manufacturing alone to consider labour productivity in different manufacturing and service industries in a broader range of cities, perhaps across the European Union. It may be that the types of analyses presented in this thesis, and particularly those of chapters seven and eight, hold the potential to probe into some of the fundamental mechanisms which affect economic and employment change in cities and regions across national boundaries. To ask general rather specific spatial questions would allow for a more comprehensive evaluation of the actual research contribution that can be made through analyses of labour productivity change.

References.

Aaberg R Y (1973) : Productivity differences in Swedish manufacturing, Regional and Urban Economics, 3, 131 - 156.

Abercrombie P (1945) Greater London plan 1944. London : HMSO.

Adams D, Russell G, Taylor-Russel C (1994) Land for industrial development. London : E&FN Span.

Algietta M (1979) : A theory of capitalist regulation. London : New Left Books.

Allen J (1988) Towards a post - industrial economy, in Allen J and Massey D (eds) Restructuring Britain : The Economy in Question. London: Sage. 92-135.

Allen J and Massey D (1988) Introduction, in Allen J and Massey D (eds) Restructuring Britain : The Economy in Question. London: Sage. 1-6.

Ambrose P (1986) Whatever happened to planning. London: Menthuen.

Andrikopoulos A (1980) A synthesis of the production function and the shift-share model : a new regional modelling approach, Regional Science and Urban Economics, 10, 539 - 560.

Arcelus F (1984) 'An extension of shift-share analysis', Growth and Change, 15, 3 - 8.

Armstrong H and Taylor J (1985) Regional economics and policy. Oxford : Philip Allan.

Ashby L D (1968) The shift and share analysis : a reply. Southern Economic Journal, January, 423-5.

Ashby L D (1970) Changes in regional industrial structure : a comment. Urban Studies, 7, 3, 298-304.

Astrakianaki M (1995) Intra-metropolitan productivity variations of selected manufacturing and business service sectors : what can we learn from Los Angeles ? Urban Studies 32, 7, 1081-1095.

Aydalot P and Keeble D (1988) High technology industry and innovative environments in Europe : an overview, in Aydalot P and Keeble D (eds), High technology industry and innovative environments : the European experience. London : Routledge, 1-21.

Bacon R and Eltis W (1976) Britain's Economic Problem: Too Few Producers. London: Macmillan Press.

Barff R A Knight P L III (1988) Dynamic shift-share analysis, Growth and Change, 19, 1 - 10.

Barlow Report (1940) G. B. Royal commission on the distribution of the industrial population. (1940) [cmd. 6153], (BPP, 1939-40, 8) London : HMSO.

Barnekov T, Boyle R, Rich D (1989) Privatism and urban policy in Britain and the United States. Oxford: Oxford university press.

Baron T (1992) : Deindustrialisation : myths and realities, in Lewis R (ed) Recent controversies in political economy. London : Routledge, 260-263.

Beeson P E (1987) : Total factor productivity growth and agglomeration economies in manufacturing 1959 - 73 Journal of Regional Science ,27, 183 - 199.

Beeson P E (1990) : Sources of the decline of manufacturing in large metropolitan areas, Journal of Urban Economics, 28, 71 - 86.

Bell D (1974) The coming of post-industrial society. London: Heineman.

Berndt E R (1991) The practice of econometrics : classic and contemporary. Massecheusetts : Addison-Wesley.

Berzeg K (1984) 'A note on statistical approaches to shift-share analysis', Journal of Regional Science, 24, 277 - 285.

Birchenall C and Grout P (1984) Mathematics for modern economists. Hertfordshire : Philip Allan.

Bishop K C and Simpson C E (1972) Components of change analysis : problems of alternative approaches to industrial structure. Regional Studies, 6, 59 - 68.

Blackaby F (ed) (1979) De-Industrialisation. London: Heineman.

Bluestone B and Harrison B (1982) The deindustrialization of America. New York : Basic books.

Borooah V K and Lee K C (1991) The regional dimension of competitiveness in manufacturing : productivity, employment and wages in Northern Ireland and the United Kingdom. Regional Studies, 25, 3, 219-229.

Bowers D A and Baird R N (1971) Elementary mathematical macroeconomics. New Jersey : Prentice-Hall.

Bozen S and Thirwall A D (1992) Why manufacturing industry matters, in Lewis R (ed) Recent controversies in political economy. London : Routledge, 182-286.

Breheny M J (1991) The renaissance of strategic planning ?. Environment and Planning B : Planning and Design, 18, 233-249.

Brindley T, Rydin Y, Stoker G (1989) Remaking planning: the politics of urban change in the Thatcher years . London: Unwin Hyman.

Brotherton I (1984) A response to McNamara and Healey. Town Planning Review, 55, 97-101.

Brown W S (1988) Institutional structure and deindustrialisation. Journal of Economic Issues XXII, 2, 589-597.

Brown C J and Sheriff J D (1979) Deindustrialisation a background paper, in Blackaby F (ed), Deindustrialisation. London : Heineman. 233-262.

Bruton M J and Nicholson D (1987) Local planning in practice London : Hutchison.

Buck N, Gordon I and Young K (1986) The London Employment Problem. Oxford: Clarendon Press.

Buck N and Fainstein N (1992) A comparative history 1780-1873, in Fainstein S, Gordon I, and Harloe M (eds), Divided cities : New York and London in the contemporary world. Oxford : Blackwell, 29-67.

Buck N, Drennan M and Newton K (1992) Dynamics of the metropolitan economy, in Fainstein S, Gordon I and Harloe M (eds) Divided Cities: New York and London in the Contemporary World. Oxford: Blackwell, 68 - 104.

Buck T W (1970) Shift-share analysis - A guide to regional policy ? Regional Studies, 4, 445 - 450.

Burnham J, Jones G, and Travers T (1992) The government of London : discussion paper B - planning. London : Greater London Group, London School of Economics.

Cairncross A (1979) What is deindustrialisation ? in Blackaby F (ed) Deindustrialisation. London : Heineman, 5-25.

Caralino G A (1979) : Increasing returns to scale in metropolitan manufacturing, Journal of Regional Science, 19, 363 - 74

Caralino G A (1985) : Declining city productivity and the growth of rural regions : a test of alternative explanations, Journal of Urban Economics, 18, 11 - 27.

Casler S D (1989) A theoretical context for shift and share analysis. Regional Studies, 23, 1, 43 - 48.

Cheshire P C and Leven C (1982) On the costs and economic consequences of the British land use planning system. University of Reading Discussion Papers on Urban and Regional Economics, 11.

Chiang A C (1984) Fundamental methods of mathematical economics, 3rd edition. London : McGraw Hill.

City of Westminster (1978) City of Westminster district plan. London: Westminster City Council.

City of Westminster (1991) Unitary development plan : deposit. London : City of Westminster Planning and Transportation Department.

Cliff A D and Ord J K (1973) Spatial autocorrelation. London : Pion.

Cliff A D and Ord J K (1981) Spatial processes : models and applications. London : Pion.

Cohen R (1981) The new international division of labour : multinational corporations and the urban hierarchy. in Dear M and Allen S (eds) Urbanisation and urban planning in capitalist society. New York : Menthuen.

Cohen S and Zysman J (1987) Manufacturing matters : the myth of the post-industrial economy. New York : Basic books.

Collins M (1994) Land use planning since 1947, in Simmie J (ed) Planning London. London : UCL Press, 90-140.

Corriat B and Petit P (1991) Deindustrialisation and tertiarisation : towards a new economic regime ? in Amin A and Dietrich M (eds) Towards a new Europe ? Structural change in the European Community. Aldershot : Edward Elgar Publishing, 28-43.

Cowan S and Gordon I (1993) Industrial land demand in London. London : LPAC.

Crampton G and Evans A (1992) The economy of an agglomeration : the case of London, Urban Studies, 29, 2, 259-271.

CSO (1979 - 1994) Regional Trends. London: HMSO

CSO (1981) : Indexes to the standard industrial classification revised 1980. London : HMSO.

Cullingworth J B (1985) Town and country planning in Britain (9th edition). London : Allen & Unwin.

Cullingworth J B and Nadin V (1994) Town and country planning in Britain (11th edition). London : Routledge.

Daniels P W (1986) Producer services and the post-industrial space-economy. Martin R and Rowthorn B (eds) The Geography of Deindustrialisation. London: Macmillan, 291-321.

Daniels P W and Bobe J M (1990) Planning for office development in the City of London and adjacent boroughs: the view from the local authority planner. Service Industries Research Centre, Portsmouth Polytechnic: Working Paper No. 2

Darin-Drabkin H (1977) Land policy and urban growth. Oxford : Pergammon Press.

DE (1984 - 1991) : New earnings survey . London : HMSO.

Dennis R (1978) The decline of manufacturing employment in Greater London 1966-74. Urban Studies 15, 1, 63-73.

Dhrymes P J (1965) : Some extensions and tests for the CES class of production function, Review of Economics and Statistics, 47, 357 - 366.

Diamond D and Spence N (1983) Regional policy evaluation : a methodological review and the Scottish example. Aldershot : Gower.

Diewert W E (1992) Measurement of productivity, Bulletin of Economic Research, 44, 163-198.

Dicken P (1992) Global Shift : The Internationalisation of Economic Activity, second edition. Liverpool : Paul Chapman Publishing.

DoE (1981-1986) : Commercial and industrial floorspace statistics. London : HMSO.

DoE (1985) Development and employment : Circular 14/85. London: HMSO.

DoE (1986a): Building Businesses.....Not Barriers. London; HMSO.

DoE (1986b): Proposals to modernise the Town and Country Planning (Use Classes) Order 1972. London: DoE.

DoE (1987): Change of use of buildings and other land : the Town and Country Planning (Use Classes) Order 1987: Circular 13/87. London: HMSO.

DoE (1988): Planning policy guidance note 4 : industrial and commercial development and small firms. London: HMSO.

DoE (1989a) Planning policy guidance note 3 : Strategic guidance for London. London: HMSO.

DoE (1989b) Planning policy guidance note 9 : Regional guidance for the South East. London : HMSO.

DoE (1992) Planning policy guidance note 12 : development plans and regional planning guidance. London : HMSO.

Doll J P and Orazem F (1984) Production economics : theory with application. New York : Wiley.

Dougherty C (1992) Introduction to econometrics. Oxford : Oxford University Press.

Dunford M and Fielding (1994) Greater London, the South East and the wider Britain: metropolitan polarisation, uneven development and inter-regional migration. Working Paper, School of European Studies and School of Social Sciences, University of Sussex, March 1984.

Elias P and Keogh G (1982) Industrial decline and unemployment in the inner city areas of Great Britain : a review of the evidence. Urban Studies, 19, 1, 1-15.

Eltis W and Martin A (1992) The service sector is also productive, in Lewis R (ed) Recent controversies in political economy. London : Routledge, 276-281.

Esser J and Hirsch J (1989) The crisis of Fordism and the dimensions of a 'post Fordist' regional and urban structure. International Journal of Urban and Regional Research 13, 3, 417-437.

Evans A (1985) Urban economics : an introduction. Oxford : Basil Blackwell.

Evans A (1988) No room ! No room ! The costs of the British town and country planning system. London : Institute of Economic Affairs.

Evans A (1991)Rabbit hutches on postage stamps : planning, development and political economy. Urban Studies, 28, 853-870

Eversley D E C (1984) Does London need strategic planning. London Journal, 10, 1, 14-45.

Fainstein S Gordon I and Harloe M (eds) (1992) Divided Cities : New York and London in the Contemporary World. Oxford: Blackwell.

Fingleton B (1992) The location of employment in high-technology manufacturing in Great Britain. Urban Studies, 29, 8, 1265-1276.

Fingleton B (1994) The location of high-technology manufacturing in Great Britain : changes in the late 80s. Urban Studies, 31, 1, 47-57.

Fingleton B and Tyler P (1990) A cost based approach to the modelling of industrial movement in Great Britain. Regional Studies 24, 5, 433-445.

Forshaw J H and Abercrombie P (1943) County of London plan. London : Macmillan.

Fothergill S Gudgin G (1979a) In defence of shift-share. Urban Studies, 16, 309 - 319.

Fothergill S and Gudgin G (1979b) Regional employment change : a sub-regional explanation. Progress in Planning, 12, 155-219.

Fothergill S and Gudgin G (1982) Unequal Growth: Urban and Regional Employment Change in the UK. London: Heineman.

Fothergill S and Gudgin G (1983) Trends in regional manufacturing employment: the main influences, in Goddard J B and Champion AG (eds) The Urban and Regional Transformation of Britain. London: Menthuen. 27-50.

Fothergill and Gudgin (1985) Ideology and methods in industrial location research, in Massey D and Meegan R (eds) Politics and methods : contrasting studies in industrial geography. London : Menthuen, 92-115.

Fothergill S, Gudgin G, Kitson M, and Monk S (1984) Differences in the profitablitity of the UK manufacturing sector between conurbations and other areas. Scottish Journal of Political Economy, 31, 1, 72-91.

Fothergill S, Kitson M and Monk S (1985) Urban Industrial Change: The causes of the urban rural contrast in manufacturing employment trends. London: HMSO

Fothergill S , Gudgin G, Kitson M, and Monk S (1986) The deindustrialisation of the city, in Martin R and Rawthorn B (eds), The geography of deindustrialisation. London : Macmillan, 214-237.

Friedmann J and Woolf G (1982) World city formation : an agenda for research and action. International Journal of Urban and Regional Research, 6, 3, 309-344.

Frost M E (1991) Change in economic structure and opportunity, in Hoggart K and Green D R (eds), London : a new metropolitan geography. London : Edward Arnold, 34-50.

Frost M and Spence N (1991a) British Employment in the Eighties: the spatial, structural and compositional change of the workforce. Progress in Planning 32, 2, 75-168.

Frost M and Spence N (1991b) Employment change in Central London in the 1908s. I The record of the 1980s. Geographical Journal 157, 1, 1-12.

Frost M and Spence N (1991c) Employment change in Central London in the 1980s. II Understanding recent forces for change and future development constraints. Geographical Journal, 157, 2, 125 - 135.

Frost M and Spence N (1993) Global city characteristics and Central London's employment', Urban Studies 30, 3, 547 - 558.

Fuchs V (1967) Differentials in hourly earnings by region and city size, 1959. National Bureau of Economic Research, Occasional paper No.101, Massachusetts.

Garofalo G A and Fogarty M S (1987) The role of labor costs in regional capital formation. The Review of Economics and Statistics, 69, 593-599.

GB Minister Without Portfolio (1985) Lifting the burden (Cmnd. 9571). London: HMSO.

Gerking S (1994) Measuring productivity growth in US regions : a survey. International Regional Science Review, 16, 1&2, 155-186.

Gershuny J and Miles I (1983) The new service economy : the transformations of employment in industrial societies. London : Frances Pinter.

Glasson J (1978) An introduction to regional planning (2nd edition). London : Hutchison.

GLC (1969) Greater London development plan : statement. London : GLC.

GLC (1983) Closing down and moving out: manufacturing firms leaving Greater London 1976-80. London : GLC.

GLC (1985) London industrial strategy. London : GLC.

Goddard J B (1983) Structural change in the British space economy. in Goddard J B and Champion A G (eds), The urban and regional transformation of Britain. London : Menthuen, 1-26.

Goodchild M F (1986) Spatial autocorrelation : concepts and techniques in modern geography. *Norwich (?)* : Institute of British Geographers.

GoL (1985) Strategic planning guidance for London planning authorities : consultation draft. London : HMSO.

GoL (1996) London in the UK economy : a planning perspective. London : DoE.

Gordon I (1995) London : World City : political and organisational constraints on territorial competition, in Cheshire P and Gordon I (eds) Territorial competition in an integrating Europe. Aldershot : Avesbury, 295-311.

Gordon I and Harloe M (1991) A dual to New York ? London in the 1980s, in Mollenkopf J H and Castells M (eds) Dual city : restructuring New York. New York : Russell Sage Foundation, 377 - 96.

Gould J D (1969) Hypothetical history. The Economic History Review, XXII, 2, 195-207.

Gowling D and Leith P (1988) Urbanisation, planning and administration in the London region : processes of a metropolitan culture. in Van der Cammen H (ed) Four metropolises in Western Europe : development and urban planning of London, Paris, Ranstaad Holland, and the Ruhr region. Netherlands : Van Goram.

Graham D and Spence N (1995) Contemporary deindustrialisation and tertiarisation in the London economy. Urban Studies, 32, 6, 885-911.

Graham D and Spence N (forthcoming a) Competition for metropolitan resources : the 'crowding out' of London's manufacturing industries ? Environment and Planning A.

Graham D and Spence N (forthcoming b) A productivity growth interpretation of the labour demand shift-share model. Regional Studies.

Grant M (1982) Urban planning law. London : Sweet and Maxwell.

Grant M (1989) Permitted development: the Use Classes Order 1987 and the General Development Order 1988. London: Sweet and Maxwell.

Grant M and Heap D (1991) Encyclopaedia of planning law and practice. London : Sweet and Maxwell.

Griffith D A (1987) Spatial autocorrelation : a primer. Washington D C : Association of American Geographers.

Gripaios P (1977a) Industrial decline in London : an examination of its causes. Urban Studies, 14, 2, 181-189.

Gripaios P (1977b) The closure of firms in the inner city : the South East London case 1970-75, Regional Studies, 11, 1, 1-6.

Greater London Group (1983a) DoE research project on strategic guidance and development plans : first report to Leeds Metropolitan University project team. London : Greater London Group, London School of Economics.

Greater London Group (1983b) DoE research project on strategic guidance and development plans : final report to Leeds Metropolitan University project team. London : Greater London Group, London School of Economics

Green A (1991) High- tech industry, advanced service industries and regional growth in Britain, in Wild T and Jones P (eds) Deindustrialisation and new industrialisation in Britain and Germany. London : Anglo German Foundation for the Study of Industrial Society, 227-253.

Green D R (1991) The metropolitan economy : continuity and change, in Hoggart K and Green D R (eds), London : a new metropolitan geography. London : Edward Arnold.

Hall P (1962) The industries of London since 1861. London : Hutchison.

Hall P (1964) Industrial London : a general view. in Coppock J and Prince H C (eds), Greater London. London : Faber and Faber, 225-245.

Hall P (1984) The world cities. London : Weidenfield and Nicholson.

Hall P (1985) The geography of the fifth Kondratieff cycle. in Hall P and Markusen A (eds) Silicon Landscapes. London : Allen and Unwin, 1-19.

Hall P (1987) the geography of the post-industrial economy, in Brotchie F, Hall P and Newton P W (eds) The spatial impact of technological change. London : Croom Helm,

Hall P (1988) Cities of tomorrow: an intellectual history of urban planning and design in the twentieth century. Oxford: Basil Blackwell.

Hall P (1989a) London 2001. London: Unwin Hyman.

Hall P (1989b) Urban and regional planning. London: Unwin Hyman.

Hall P (1994) London 1994 : retrospect and prospect, in Simmie J (ed) Planning London. London : UCL Press.

Hall P and Preston P (1988) The carrier wave : new information technology and the geography of innovation, 1846-2003. London : Unwin Hyman.

Hall P, Breheny M, Maquaid R and Hart D (1987) :Western Sunrise : The Genesis and Growth of Britain's Major High Tech Corridor. London: Allen Unwin.

Hamilton F E (1991) A new geography of London's manufacturing, in Hoggart K and Green DR (eds) London : A New Metropolitan Geography. London: Edward Arnold. 51 - 78.

Harloe M and Fainstein F (1991) Conclusion : The Divided Cities, in Fainstein S, Gordon I and Harloe M (eds) Divided Cities : New York and London in the Contemporary World. Oxford: Basil Blackwell. 236-268.

Harris C (1988) The UK economy at a crossroads, in Allen J and Massey D (eds). The Economy in Question. London: Sage. 8-36.

Harris R I D (1982) : Estimates of inter-regional differences in production in the United Kingdom, 1968-78. Oxford Bulletin of Economics and Statistics 44 241 - 59

Harris R I D (1983) The measurement of capital services in production for UK regions, 1968-78. Regional Studies, 17, 3, 169-180.

Harrison A J (1977) Economics and land use planning. Newbury : Policy Journals Ltd.

Haynes K E and Machunda Z B (1987) Considerations in extending shift-share analysis, Growth and Change, 18, 69 - 78.

Haynes K E Machunda Z B (1988) Decomposition of change in spatial employment concentration : an information-theoretic extension of shift-share analysis, Papers of the Regional Science Association, 65, 101 - 113.

Healey P (1983) Local plans in British land use planning. Oxford : Pergammon.

Healey P (1989) Directions for change in the British planning system. Town Planning Review, 60, 2, 125-149.

Healey P, Mcnammara P, Elson M, and Doak A (1988) Land use planning and the mediation of change. Cambridge : Cambridge University Press.

Heap D (1982) An outline of planning law (8th edition). London : Sweet and Maxwell.

Heap D (1991) An outline of planning law (10th edition). London : Sweet and Maxwell.

Hebbert M (1989) Research uses of development control data. in Hebbert M (ed) Development control data : a research guide. Swindon : ESRC, 1-13.

Hebbert M (1990) Making the most of the system we have. Town and Country Planning, March, 90-91.

Hebbert M (1991) The borough effect in London's geography. in Hoggart K and Green D R (eds) London : a new metropolitan geography. London : Edward Arnold, 191-206.

Hebbert M (1993) London leaderless 1986-1993, paper presented to the 7th Association of European Schools of Planning Conference, Lodz, Poland.

Hebbert M and Travers T (1988) The London Government handbook. London : Cassell.

Henderson J V (1986) : Efficiency of resource use and city size Journal of Urban Economics 19 47 - 70

Henderson J V (1988) : Urban Development : theory, fact and illusion. Oxford : Oxford University Press.

Henry N (1992) The new industrial spaces : locational logic of a new production era ? International Journal of Urban and Regional Research, 16, 3, 375-396.

Holden D R, Swales J K and Nairn A G M (1987) The repeated application of shift-share : a structural explanation of regional growth ? Environment and Planning A, 19, 1233 - 1250.

Home R (1992) The evolution of the use classes order. Town Planning review , 63, 2, 187-201.

Home R (1989): Planning use classes: a guide to the use classes orders (2nd edition). Oxford: BSP Professional.

Home R (1992) The evolution of the use classes order. Town Planning review , 63, 2, 187-201.

Houston D B (1967) The shift and share analysis of regional growth : a critique. Southern Economic Journal, 33, 577 - 581.

Hughes J (1981) Britain in Crisis: deindustrialisation and how to fight it. Nottingham: Spokesman.

Jensen-Butler (1995) A theoretical framework for the analysis of urban economic policy. Paper presented at the Regional Studies Association conference, Gothenburg, 6-9 May.

Johnston J (1984) Econometric methods, 3rd edition. New York : McGraw Hill.

Johnson P (1990) The workers of London. unpublished working paper, Department of Economic History, London School of Economics.

Johnston R J (1978) Multivariate statistical analysis in geography : a primer on the general linear model. London : Longman.

Johnston R J (1986) Philosophy and human geography : an introduction to contemporary approaches, 3rd edition. London : Edward Arnold.

Jones P and Wild T (1991) Industrial restructuring and spatial change in Britain and West Germany, in Wild T and Jones P (eds) Deindustrialisation and New Industrialisation in Britain and Germany. London: Anglo German Foundation for the Study of Industrial Society. 1-39.

Judge G G, Hill R C, Griffiths W E, Lütkepohl H, Lee T (1988) Introduction to the theory and practice of econometrics. John Wiley & Sons : New York.

Keeble D (1976) Industrial location and planning in the United Kingdom. London : Menthuen.

Keeble D (1980) Industrial decline, regional policy, and the urban rural manufacturing shift in the United Kingdom. Environment and planning A., 12, 945-962.

Keeble D (1987) Industrial change in the United Kingdom. in Lever W F (ed) Industrial change in the United Kingdom. London : Longman, 1-20.

Keeble D (1988) High technology industry and local environments in the United Kingdom. in Aydalot P and Keeble D (eds), High technology industry and innovative environments : the European experience. London : Routledge, 65-98.

Keeble D (1991) Deindustrialisation, new industrialisation processes, and regional restructuring in the European Community, in Wild T and Jones P (eds) Deindustrialisation and New Industrialisation in Britain and Germany. London: Anglo German Foundation for the Study of Industrial Society. 40-65.

Keeble D, Owens P L and Thompson C (1983) The urban and rural manufacturing shift in the European Community, Urban Studies 20, 405-418.

Kennedy R (1991) London : world city moving into the 21st century a research project. London : HMSO.

Kidder L H and Judd C M (1986) Research methods in social relations, 5th edition. New York : Holt, Reinhard and Winston.

Klosterman R E (1985) Arguments for and against planning. Town Planning Review, 56, 1, 5-20.

Knudsen D C Barff R (1991) 'Shift-share analysis as a linear model', Environment and Planning A, 23, 421 - 431.

Krugman P (1991) Increasing returns and economic geography. Journal of Political Economy, June.

Krugman P (1993) Geography and Trade. Massachusetts. MIT Press.

Lawrence P (1992) Manufacturing or services after 1992. in Lewis R (ed) Recent controversies in political economy. London : Routledge, 263-269.

Layard P R G and Walters A A (1978) Microeconomic theory. New York : McGraw-Hill.

Ledebur L C and Moomaw R L (1983) 'A shift-share analysis of regional labor productivity in manufacturing', Growth and Change, 14, 2 - 9.

Lee C (1986) The British Economy since 1700 : a macro economic perspective. Cambridge : Cambridge University Press.

Lee D (1981) Land use planning as a response to market failure, in de Neufville J (ed) The land use planning debate in the United States. New York : Pergammon Press, 149-164.

Leigh R, North D, Gough J and Escott K (1982) Monitoring manufacturing employment change in London 1976 to 1981 : the implications for local economic policy, Volumes 1 & 2. London : Middlesex Polytechnic.

Lichfield N (1979) Land values and planning : a common interest of land policy and land taxation. Urban Law and Policy, 2, 2, 111-131.

Lichfield N and Darin-Drabkin H (1980) Land policy in planning. London : George Allen and Unwin.

Liston D (1992) Manufacturing versus services - a false dichotomy. in Lewis R (ed) Recent controversies in political economy. London : Routledge, 269-276.

Lloyd M G (1986) Releasing private enterprise : lifting the burden of planning Strathclyde Papers on Planning, No 8. Glasgow : University of Strathclyde.

Louri H (1988) : Urban growth and productivity : the case of Greece, Urban Studies, 25, 433 - 438.

Lovering J (1990) Fordism's unknown successor : a comment on Scott's theory of flexible accumulation and the re-emergence of regional economies, International journal of urban and regional research, 14, 1, 159-174.

Lovering J (1991) Theorising post Fordism : why contingency matters (a further response to Scott). International journal of urban and regional research, 14, 1, 159-174.

LPAC (1988a) Strategic economic advice for London : a report for the London Planning advisory committee. Cambridge : PA Cambridge Economic Consultants.

LPAC (1988b) Draft strategic planning advice for London : policies for the 1990s : a discussion document. London : LPAC.

LPAC (1990) The new Business Class: a Study of the impact of the B1 and B2 use classes on the supply of industrial land and buildings in London. London: LPAC.

Maddala G S (1988) Introduction to econometrics. New York Macmillan.

Markusen A R (1985) Profit cycles, oligopoly, and regional development. Cambridge, Massachusetts : MIT Press.

Martin J (1966) Greater London : an industrial geography. London : Bell and Sons.

Martin R and Rowthorn B (1986) The Geography of De-industrialisation. London: Macmillan.

Martin R (1988) Industrial capitalism in transition : the contemporary reorganisation of the British space economy, in Massey D and Allen J (eds), Uneven Redevelopment : Cities and Regions in Transition. London : Hodder and Stoughton, pp 202-231.

Massey D (1984) Spatial Divisions of Labour: Social Structures and the Geography of Production. London: Macmillan.

Massey D (1988) What's happening to UK manufacturing ?, in Allen J and Massey D (eds), Restructuring Britain : The Economy in Question. London : Sage, pp 45-90.

Massey D and Meegan R (1978) Industrial restructuring versus the cities. Urban Studies, 15, 3, 273-288.

Massey D and Meegan R (1982) The anatomy of job loss. London : Methuen.

Massey D and Meegan R (eds) (1985) Politics and method : contrasting studies in industrial geography. London : Methuen.

Màtyàs, L Sevestre, S (eds) (1992) : The econometrics of panel data : handbook of theory and applications. Dordrecht : Kluwer Academic.

McNamara P and Healey P (1984) : The limitations of development control data in planning research. Town Planning Review, 55, 91-97.

McNamara P, McNamara G and Mathrani S (1989) District council storage and use of development control data. in Hebbert M (ed) Development control data : a research guide. Swindon : ESRC, 25-34.

Mills E S (1972) Studies in the structure of the urban economy. Baltimore : John Hopkins Press.

Moomaw R L (1981a) : Productivity and city size : a critique of the evidence . Quarterly Journal of Economics 94 675 - 688.

Moomaw R L (1981b) : Productive efficiency and region. Southern Economic Journal, 48 (2), 344-357.

Moomaw R L (1983a) : Spatial productivity variations in manufacturing : a critical survey of cross sectional analyses International Regional Science Review ,8 , 1 - 22.

Moomaw R L (1983b) : Non labour income measures of capital intensity versus capital stock measures in estimating the determinants of regional labour productivity differentials : the manufacturing sector. Annals of Regional Science, 17, 79-93.

Moomaw R L (1985) : Firm location and city size : reduced productivity advantages as a function of the decline of manufacturing in large cities Journal of Urban Economics , 17, 79 - 89.

Moomaw R L (1988) : Agglomeration economies : localisation or urbanisation ?, Urban Studies, 25, 150 - 161.

Moore B and Rhodes J (1973) Evaluating the effects of British regional economic policy. Economic Journal, 83, March, 87-110.

Moore B C, Rhodes J and Tyler P (1984) Geographical Variations in Industrial Costs. Department of Land Economy, University of Cambridge, Discussion Paper 12.

Moser C and Kalton G (1987) Survey methods in social investigation. London : Gower.

Nakamura R (1985) : Agglomeration economies in urban manufacturing industries : a case of Japanese cities. Journal of Urban Economics, 17, 108 - 124.

Norris H (1987) The new Use Classes Order. Journal of Environment and Planning Law, December, 819-836.

North D and Smallbone D (1995) The employment generation potential of mature SMEs in different geographical environments. Urban Studies, 32, 9, 1517-1534.

Nuffield (1986) Town and country planning : a report to the Nuffield foundation. London : Nuffield Foundation.

Oatley N (1991) Streamlining the system : implications of the B1 Business Class for planning policy and practice. Planning Practice and Research, 6, 19-28.

Oppenheim A N (1986) Questionnaire design, interview and attitude measurement. New York : Pinter Publishers.

PAG (1985) Town and Country Planning (Use Classes) Order 1972: Report. London : HMSO.

Parry-Lewis J (1979) Urban economics : a set approach. London : Edward Arnold.

Planning (1986) Business Class Tipped to Disappoint Users. Planning, 694, 120.

Porter M (1990) The Competitive Advantage of Nations. London : Macmillan.

Prince H C (1971) Real, imagined and abstract worlds of the past. Progress in Human Geography, 3, 1-86.

Purdue M, Young E, Rowan-Robinson J (1989): Planning law and procedure. London: Butterworth.

Quinn J F and McCormick K (1981) Wage rates and city size. Industrial Relations, 20, 2, 193-199.

Randall J N (1973) Shift-share analysis as a guide to the employment performance of West Central Scotland. Scottish Journal of Political Economy, XX, 1, 1-26.

Ratcliffe J (1988) An introduction to town and country planning (2nd edition). London : UCL press.

Richardson H W (1978a) Urban Economics. Illinois : Dryden Press.

Richardson H W (1978b) The state of regional economics : a survey article. International Regional Science Review, 3, 1 - 48.

Richardson H W (1978) The economics of urban size. Saxon House : Farnborough.

RICS (1984a) Amending the Use Classes Order to deal with high technology development : discussion paper. July, GCPA/ Report (84) 28.

RICS (1984b) Improvements and amendments to the planning system: a memorandum of observations, October, GCPA/ Report (84) 39.

RICS (1986a) Town and Country Planning (Use Classes) Order 1972 : a memorandum on the Property Advisory Group's report. February, GCPA/Report (86) 3.

RICS (1986b) Proposals to modernise the Town and Country Planning (Use Classes) Order 1972: a memorandum of observations, October, GCPA/Report (86) 13.

Roberts M (1990) Strategic vision - returning from exile. Town and Country Planning, March, 75-76.

Rodwin L and Sazanami H (1989) Deindustrialisation and regional economic transformation : the experience of the United States. Boston : Unwin Hyman.

Rowthorn B (1986) Deindustrialisation in Britain, in Martin R and Rowthorn B (eds) The Geography of Deindustrialisation. London: Macmillan.

Rowthorn R E and Wells J R (1987) De-industrialisation and foreign trade. Cambridge : Cambridge University Press.

RTPI (1986) Proposals to modernise the Town and Country Planning (Use Classes) Order 1972: memorandum of observations to the Department of the Environment on its consultation paper, October. London: RTPI.

Rydin Y (1989) A beginners guide to development control. in Hebbert M (ed) Development control data : a research guide. Swindon : ESRC, 15-24.

Rydin Y (1993) The British planning system : an introduction. London : Macmillan.

Sassen S (1991) The Global City : New York, London, Tokyo. Princeton: Princeton University Press.

Sassen S (1994) Cities in a world economy. London : Pine Forge Press.

Savitch H V (1988) Post Industrial Cities : Politics and Planning in New York, Paris and London. Princeton: Princeton University Press.

Sayer A (1989) Post Fordism in question. International Journal of Urban and Regional Research, 13, 4, 666-695.

Schwarz L D (1992) London in the age of industrialisation : entrepreneurs, labour force and living conditions 1700 - 1850. Cambridge : Cambridge University Press.

Scott A J (1982) Locational patterns and dynamics of industrial activity in the modern metropolis, Urban Studies, 19, 111-42.

Scott A J (1988) Flexible production systems and regional development : the rise of new industrial spaces in North America and Western Europe, International Journal of Urban and Regional Research, 13, 4, pp 666-695.

Segal D (1976) : Are there returns to scale in city size ?, Review of Economics and Statistics, 53, 339 - 350.

Shefer D (1973) : Localization Economies in SMSAs : a production function analysis Journal of Regional Science, 13, 55 - 64.

Simmie J (1994) (ed) Planning London. London : UCL Press.

Singh A (1977) UK industry and the world economy : a case of deindustrialisation ?, Cambridge Journal of Economics, 1, 113-6.

Soroka L (1994) : Manufacturing productivity and city size in Canada, 1975 and 1985 : Does population matter ?, Urban Studies, 31 (6), 895 - 911.

Stewart J (1991) Econometrics. London : Philip Allan.

Stevens D F (1964) The central area, in Coppock J T and Prince H C (eds), Greater London. London : Faber and Faber, 167-201.

Stillwell F J B (1970) Further thoughts on the shift and share approach. Regional Studies, 4, 451 - 458.

Sveikauskas L A (1975) : The productivity of cities, Quarterly Journal of Economics, 89, 392 - 413.

Telling A E and Duxbury R M C (1993) Planning law and procedure. London : Butterworths.

Thornley A (1988) Planning in a cool climate: the effects of Thatcherism. Planner, 74, 7, 17-19.

Thornley A (1989) Planning and the ideology of the New Right. Planning Theory Newsletter Summer, 23-37.

Thornley A (1991) Urban planning under Thatcherism: the challenge of the market London: Routledge.

Tooze M J (1976) : Regional elasticities of substitution in the United Kingdom in 1968. Urban Studies 13 (1), 35 - 44

Townroe P M (1969) Industrial structure and regional economic growth - a comment. Scottish Journal of Political Economy, February, 1969, 95-98.

Travers T, Jones G, Hebbert M, and Burnham J (1991) The Government of London. York : Joseph Rowntree Foundation.

Tyler P Rhodes J (1986) : The census of production as an indicator of regional differences in productivity and profitability in the United Kingdom, Regional Studies, 20 (4), 331 - 339.

Tyler P, Moore B, and Rhodes J (1988) : Geographical Variations in Costs and Productivity. London : HMSO

Vagionis N, Spence N (1994) : Total factor regional productivity in Greece. Environment and Planning C : Government and Policy 12 383 - 407

Vickerman R (1984) Urban Economies. Oxford : Philip Allen.

Wannop U (1992) Viewpoint : where to in the revival of British regional planning ?. Town Planning Review, 63, 2, iii-vii.

Webber M (1969) Planning in an environment of change part II : permissive planning. Town Planning Review, 39, 4, 277-295.

Williams, M Moomaw R L (1989) : Capital and labor efficiencies : a regional analysis, Urban Studies, 26, 573 - 585.

Willis K G (1980) The economics of town and country planning. London : Butterworth.

Whitehead C M E (1983) The rationale for government intervention, in Dunkerley H B (ed) Urban land policy : issues and opportunities. Oxford : Oxford University Press, 108-131.

Wood P (1986a) Economic change, in Clout H and Wood P (eds), London : problems of change. Essex : Longman, 60-74.

Wood P (1986b) The anatomy of job loss and job creation : some speculations on the role of the 'producer service' sector. Regional Studies, 20, 1, 37-46.

Wood P (1991) The single European market and producer service location in the United Kingdom, in Wild T and Jones P (eds), Deindustrialisation and new industrialisation in Britain and Germany. London : Anglo German Foundation for the Study of Industrial Society, 254-282.

Wootton Jeffreys (1991) An examination of the effects of the Use Classes Order 1987 and the General Development Order 1988. London HMSO.

Young K (1984) Governing Greater London : the background to GLC abolition and an alternative approach. London Journal, 10, 1, 69-79

Appendix one : Sources of empirical data and classifications used in the thesis.

Appendix one describes sources of data which are used in this thesis, and associated classifications and definitions. Many of the data sets have been obtained from the National On-line Manpower Information System (NOMIS) data base held at the University Of Durham, or from the CSO publication *Regional Trends* (CSO, 1979-1994). Details on these sources can be found in the NOMIS user manuals, and in the appendix to *Regional Trends*. The descriptions that follow, comprise summaries from published documents and personal communications with the bodies responsible for collecting and publishing the data.

Data classifications and definitions.

Excluding data presented in chapter eight, all employment, output and firm data used in the thesis are classified under the 1980 SIC. Three levels of disaggregation of the 1980 SIC are referred to in this thesis. **Activity Headings** are the most detailed level used and comprise 335 activities in industrial structure, the 61 **Classes** form the third level of the 1980 SIC, and 11 divisions form the fourth and top level of the SIC.

Reference is made to terms throughout the thesis which relate to these levels of disaggregation. **Manufacturing**, as conventionally defined by the Department of Employment, refers to the aggregation of divisions 2 to 4 inclusive and excludes construction. A further distinction is made within manufacturing industry: that of **high and low technology manufacturing industry**. Using the definition provided by Hall et al (1987) high technology industry comprises the following activity headings : 2570, 3302, 3441, 3442, 3443, 3444, 3453, 3454 and 3640. Low technology manufacturing simply comprises all activities within divisions 2-4 less high technology industry.

Services refers to the aggregation of divisions 6 to 9 inclusive and excludes construction. Within services, **producer services** are sometimes referred to and for purposes of data analysis, the thesis has adopted the definition provided by Sassen (1991) which comprises activity headings 8140, 8150, 8200, 8310, 8320, 8340, 8350,

8370, 8380, 8394, 8395, 8396, 8410, 8420, 8430, and 9631. **Non-producer services** includes all activities in divisions 6-9 less producer service employment.

In chapter eight, employment and output data are introduced which have been classified under the 1992 SIC (see below). These data were available for manufacturing industries at the section level of disaggregation which comprises sections DA to DN.

Any other sectoral definitions used or different classification are described at the appropriate place in the text or in the discussion below.

Data sources.

1) The Census of Employment : employment and unit size data.

Unless other wise specified (see Chapter 8), the employment data used in this thesis are collected via the Department of Employment's (DE) Censuses of Employment (CoE), and made available through NOMIS. The CoE is a comprehensive postal survey questionnaire of employees in employment, analysed using the 1980 SIC. The register of addresses used for the census is derived from the Inland Revenue addresses for collecting employers income tax under the Pay-As-You-Earn (PAYE) scheme, and is thus a workplace based census. The address to which a census form is sent is referred to as a reporting unit, and each unit is asked to provide various details regarding the number of employees for each worksite and the distinct industrial activity. The census is updated triennially and polls all units with 25 or more employees, and a sample of those with 24 or fewer. It does not include information on the self-employed. The DE produces employment estimates on a quarterly basis each year. However, these estimates are not available at detailed levels of industrial and geographical disaggregation, and furthermore, their reliability is questionable because they are simply projections based upon the previous full census. Their use in this thesis has therefore been deliberately limited, and the focus of analysis is on the more comprehensive and reliable census figures.

In its most disaggregated form, employment data is available for activity headings at the ward level.

It should be stressed here that the CoE indicates the number of employees engaged within industries, it gives no indication of the nature of occupations being conducted. As regards manufacturing, this means that one cannot distinguish between office based or non-office based employment or between 'productive' and non-productive manufacturing. This point is highlighted in chapter four.

In addition to the employment figures the CoE has, since 1987, also allowed access to the number of data units reporting to the census, and gives a breakdown of these units in terms of size, defined by number of employees. These units, do not correspond to firms or companies, but are roughly approximate to workplaces.

2) Manufacturing output data.

The principal source of output data for manufacturing industry are the Gross Value Added (GVA) figures collected via the Census of Production (CoP) and published in *Regional Trends*. The CoP is a yearly workplace based census of United Kingdom businesses engaged in industrial production. Prior to 1987 the reporting unit to the CoP was the establishment, and these were asked to exclude where possible non-production activity in their returns. In 1987, the system was changed to used companies as the main reporting units and the summary volumes stated that companies were generally no longer asked to exclude non-production activities, although it is not made clear what these activities actually involve. Personal communication with Mr Darn Barnes at the CSO Newport office clarified these issues. It would seem that non-production activities primarily comprise office and transport functions. The CSO were anxious that the data should be consistent over time and so were still concerned about non-production activities after 1987. The CSO anticipated that the new company based system may result in large mixed activity companies reporting all data from one geographical location when production could be spread across various regions. For this reason, companies are asked to make separate returns to the census for each of their production activities on an establishment basis. As regards headquarter functions, for example in

London, Mr Barnes stated that the CSO would have excluded these activities from published data prior to 1987, and since then have attempted to distribute GVA from headquarters to regional establishments on the basis of employment. In this way the CSO are confident that headquarter functions should not bias the GVA estimates.

The London GVA figures are for manufacturing industry as a whole (sum of divisions 2-4) and are available from 1984 to 1991 for London, and from 1987 to 1991 at the borough level. GVA is the preferred measure of manufacturing output used in the literature, largely because it excludes bought in services which are "a significant and increasing proportion of net output" (Tyler, Rhodes, 1986). Specifically, the CSO define GVA as the value of total sales and work done, less the value of purchases, less payments for industrial services received, less net duties and levies, and less the cost of non-industrial services, rates, and motor vehicle licences.

The CSO does not publish the regional and district data in constant prices because inflation varies spatially throughout the country. This creates unavoidable inaccuracy in applying a national deflator to the regional and district data. For analysis in this thesis, however, time-series comparison was essential. The CSO provided a consistent national price index of manufactured output from 1984 to 1991 in constant 1990 prices. This deflator has been cited in the literature as the most appropriate for GVA data (Borooah, Lee, 1991) and has been used to estimate the figures in real terms.

In chapter eight a different source of output data, workplace based Gross Domestic Product (GDP), is introduced. This GDP data is disaggregated for manufacturing industries at the section level of the 1992 SIC. There is no clear account of the differences between GVA and GDP in the published documents, however like the GVA figures, GDP does exclude bought in services (Tyler, Rhodes, 1986). Mr Alan Smith at the London CSO office stresses that the differences between the two indicators, arise not so much conceptually, but in accounting methods used to compile the figures. Officially, regional GDP is measured as the sum of all incomes earned from the production of goods and services at factor cost. In a perfectly competitive economy, the value of output, or incomes earned, would be equivalent to the total costs of production. In a real world economy the imposition of taxes and subsidies distorts this relationship

and factor cost is a term which describes the value of output at market prices, less taxes on expenditure, and plus the subsidies to production.

The London workplace based manufacturing GDP data were provided for the purposes of this thesis by Mr Bob Cooper at the CSO. These figures are estimates of GDP based on information from the CoP and are calculated to correspond to national figures of GDP, and to regional and county estimates of GVA. Difficulties arise in comparison of the GVA and GDP figures for London because the data are produced under different SICs. However, since the disaggregated GDP figures are essentially based on CoP data the two should be approximate, and in fact the raw data show that they are of an almost identical order of magnitude. The GDP data are not published in constant prices and to obtain time series data a national implied price deflator of GDP was used which was supplied by the CSO.

3) Firm data : VAT registration and deregistration data.

These data are produced by the DTI and made available through NOMIS. They give information on the number of businesses which register and deregister for VAT each year, and also of the total stock of registered businesses at the end of each year. The data are available at the Local Authority District (LAD) level and are disaggregated by 11 industrial groups. One point worth stressing about this data set is that the definition of manufacturing available is actually slightly different than for the other sources. The VAT data define a category called production which is the summation of divisions 1-4 of the 1980 SIC, rather than the standard definition of manufacturing which incorporates divisions 2-4. The implications of this difference are described in the thesis where the data are introduced.

4) Commercial and industrial floorspace statistics (CIFS).

The CIFS data, which were published each year until 1986 (DoE, 1981-1986), describe industrial and commercial property in England. The data are available at the LAD level, for six land use categories : commercial offices, shops and restaurants, shops with living accommodation, warehouses (covered), warehouses (open land and storage) and

industry. The data were compiled by the Inland Revenue for the purposes of rating properties and the six land use categories are based on Inland revenue use classes. Industrial floorspace comprises most private manufacturing and include office floorspace within industrial premises. Properties excluded from the data set include establishments which contain so many different buildings that they are sufficiently complex to require special consideration for valuation purposes.

5) The London Development Monitoring System (LDMS).

The LDMS has been developed by the London Research Centre (LRC), and contains data derived from planning applications, submitted to the 32 boroughs and the City of London, for major development over 1000m^2 throughout London. This data is not publicly accessible, however the LRC have permitted access for the purposes of this thesis. The LDMS is the most comprehensive planning data set that exists in London, however the most reliable data only runs from 1987 to the present day. The LDMS record the type of use and floorspace under categories of the 1987 UCO. The primary focus in this thesis is on data relating to the B2 (general industrial) and B3(light industrial) use classes. The other special industrial classes B4-B7 are not recorded by the LDMS because such an insignificant amount of this space exists within the capital. Cowan and Gordon (1993) have taken use classes B2 and B3 as representative of manufacturing use and the same definition is used here. Two points of caution about the use of the LDMS should be raised. First, first the data quality varies by borough and inaccuracies do not permit the use of floorspace measurements. Second, the LDMS only records developments of over 1000m^2 and thus does not provide fully comprehensive information on development activity in London.

6) New Earnings Survey (NES).

NES data are introduced in chapter eight. The NES is a sample survey of the earnings of employees in employment carried out in April of each year by the DE. The survey measures gross earnings of a 1% sample of employees, converted to a weekly and hourly basis where normal basic hours were reported. In the published tables (DE, 1984-1991), data are disaggregated at the class level of the 1980 SIC, and for four

employee groups : male manual workers, male non-manual workers, female manual workers, and female non-manual workers. For London however, many entries are missing in the published data, indeed, it is only for the male manual category that a sufficient number of entries were available for analysis. Discussion in *Regional Trends* confirms that data is only published at the regional level where the number of employees reporting in the survey were 50 or more and the standard error of average earnings 5% or less.

Where other sources of data used in the thesis they are described in the appropriate places in the text.

Appendix two : The statutory and administrative bases of the London planning system.

Town and Country Planning in Britain.

For the purposes of brief explanation, three central components of the British town and country planning system may be defined (Nuffield, 1986). First, a system of governmental and quasi-governmental agencies established to administer and undertake the functions of town and country planning; second, a system of development plans which outline policies and proposals for the development and use of land; and third, a system of development control, which with certain exceptions, requires the consent of the appropriate planning authority to undertake 'development' as defined in the legislation. These three components, which are entirely inter-related, were first fully established in the foundation Act of 1947. The 1947 Act was amended several times and consolidation Acts for England and Wales have been made in 1962, 1971 and 1990. Currently the principle Act relating to town and country planning is the Town and Country Planning Act 1990, although other Acts created in 1990 and 1991 are also relevant (Grant, Heap, 1991). However, while important legislative changes have occurred since the 1947 Act, in essence the three elements defined above still comprise the basic framework for land use planning in Britain. It is worth discussing each component of planning in turn.

The institutional arrangements for town and country planning are essentially hierarchical in nature, with national government bodies being concerned with national and strategic planning policy, which constrains or influences the scope of local governmental and quasi-governmental planning functions below. Overall responsibility for the administration of town and country planning in England and Wales rests with the Secretary of the State for the Environment. The 1947 Act charged the predecessor of the Secretary of State, the Minister of Town Planning, with the responsibility of "securing consistency and continuity in the framing of a national policy with respect to the use and development of land" (Grant, Heap, 1991, 10015). Following the dissolution of the Ministry of Housing and Local Government under the Secretary of State for the Environment Order 1970, this statutory obligation was removed. However it is generally

accepted that the basic role defined in the 1947 Act has continued since (Cullingworth, Nadin, 1994).

To allow this general role to be performed, the planning legislation has defined a number of important duties for the Secretary of State. These are the making of regulations and orders relating to town planning, for example the Use Classes Order and General Development Order; the approval of certain actions of LPAs; the determination of appeals against LPA decisions; the making of judicial determinations on planning issues, such as whether any proposed development is unlawful or not; and the issuing of directions were it is though appropriate, which may take the form of general directions, for example laying down some general form or planning procedures, or may be more specific, for example the 'calling in' of a particular planning application by direction for his own decision. The Secretary of State also has a number of default powers which can be used to ensure consistency and continuity in planning policy. For example, if the Secretary of State considers that a planning authority have failed in their obligation to undertake a statutory duty, then default powers may be used to permit the Secretary to undertake this duty.

Another important function which allows the Secretary of State to perform the broad role outlined above, is in the communication of central policy on town planning issues. The Secretary of State, through the DoE produces policy guidance which is of crucial importance to local planning authorities in drawing up their development plans, or in making development control decisions. There are various ways in which this guidance is issued. Since 1989, the series of Planning Policy Guidance notes (PPGs) have become the primary mechanism for the communication of government policy in substantive areas of planning, with Minerals Policy Guidance notes (MPGs), and Derelict Land Grant Advice notes (DLGAs) also being of importance. DoE circulars, which were the main source of planning policy output from the DoE before the introduction of PPGs, tend now to be concerned largely with the explanation of statutory procedures. Other main sources of central government policy guidance include Regional Policy Guidance Notes (RPGs), which provide strategic advice for the regions of England, and Development Control Policy notes, now being phased out, which provide advice to planning authorities on development control issues. Mention has been made of some of

the main guidance issued by central government, however, in the communication and interpretation of central policy on planning ministerial statements, white papers, green papers, directions, appeal decisions and the like, may all be taken into account.

Thus, the Secretary of State, through the DoE, operates in both a quasi-judicial capacity, acting as arbiter in planning disputes, and as a developer of policy (Telling, Duxbury, 1993; Cullingworth, Nadin, 1994). Other central government departments such as the Department of Transport, the Department of Natural Heritage, the Ministry of Agriculture Forestry and Food, are also importance in certain land use planning issues, and planning authorities must notify these departments of certain development proposals and planning policies.

The system of governmental and quasi-governmental institutions involved in planning at the local level is not uniform throughout the country. Different types of planning authorities in different geographical areas are involved in different planning functions. The next section of this appendix considers the institutions involved in the London planning system. A discussion of the different institutions involved in British planning is not relevant to this thesis. Instead it is sufficient to simply provide a background to local planning in Britain generally, which is basically concerned with the remaining two elements of the British town and country planning system outlined above.

The origins of the development plan system can be traced back to the Housing, Town Planning, Etc. Act of 1909. However, it was not until the Town and Country Planning Act of 1947, that each planning authority was required by statute to draw up a plan which should show the proposed pattern of land use for twenty years ahead. The nature of the development plan system in England has changed substantially since the 1947 Act, and most significantly under the Town and Country Planning Act of 1968, which made a fundamental change to the development plan system by enacting a two tier system of plans which distinguished between strategic and detailed tactical issues (Cullingworth, Nadin, 1994; Rydin, 1993; Hall, 1989b). The essential features of the 1968 development plan system are still in place in much of Britain today, and certainly "the concept of development control within the framework of a development plan is still central to the town planning system" (Purdue, Young, Rowan-Robinson, 1989, 8).

In very general terms, the development plan for an area sets out the policies and general proposals of the LPA for the development and use of land in their area. In considering planning applications, LPAs were expressly directed under the 1947 Act to have regard to the provisions of the development plan and any other material considerations. Thus, the plan was to form an important consideration in development control, though it is only one consideration. This highlights an important aspect of the British planning system - its highly discretionary nature. Traditionally the development plan has provided a generalised policy background and was not intended as a finite statement of proposed development control decisions. More recently, the 1991 Planning, Land and Compensation Act introduced Section 54A, which moves towards a more plan-led planning system, one in which the development plan will form the main consideration in development control decisions. However, as Cullingworth and Nadin (1994) note, it is too early to be sure about the consequences of this change, and for the purposes of this thesis which is concerned with the 1981 to 1991 period the development plan system can be regarded as consisting of a patchwork of generalised policies which form an important consideration in local authority development control decisions.

The third major element of the planning system concerns the control of new development. The scope of development control is set out under the relevant planning legislation. Under section 12 of the 1947 Act, development was defined as the carrying out of building, engineering, mining or other operations in, on, over or under land, or the making of any material change in the use of any building or other land. However, the 1947 Act also placed certain activities outwith the scope of the development control system including construction of buildings for purposes of agriculture and forestry, and certain changes of use or operations permitted under the Town and Country Planning Uses Classes Orders (UCO) and the Town and Country Planning General Development Orders (GDO).

Planning authorities can either grant, refuse or place conditions on applications for development. Applicants aggrieved by the decision of a planning authority may appeal to the Secretary of State for the Environment. As mentioned previously, in deciding upon an application planning authorities must take account of the provisions of the

approved development plan and other 'material considerations'. The scope of material considerations is not defined in the legislation, although they could include planning matters related to central government policy and advice, court decisions and precedent, as well as issues less directly related to planning such as social, personal, financial and amenity considerations (Heap, 1991, Bruton, Nicholson, 1987).

It should be stressed that much planning activity in Britain takes place outside this narrowly defined statutory framework and involves agencies other than central and local government. For example, Urban Development Corporation make plans and carry out development control in many British cities, and areas such as national parks, new towns and enterprise zones are outwith the scope of normal local planning authority control (Bruton, Nicholson, 1987). Furthermore, increasingly the making of policy in the British planning system is influenced by the policy agenda at the level of the European Union, particularly regarding environmental issues (Cullingworth, Nadin, 1994; Rydin, 1993). Thus, it must be recognised that the planning system in Britain is not simply a function of the central and local government agencies. However, in this thesis the concern is with particular aspects of planning control which come within the legislative confines of statutory local planning, and much less emphasis is placed on quasi-governmental or non-statutory forms of planning intervention. The following section describes the statutory arrangements for planning in London.

Statutory and administrative arrangements for planning in Greater London in the 1980s.

The institutional arrangements for planning in London have changed radically over the 1980s. Central to these changes have been the important reforms arising from the Local Government Act of 1985 which abolished the Greater London Council (GLC), and with it, the then existing administrative arrangements for the strategic planning of the Greater London conurbation.

Some authors have argued that the abolition of the GLC may be considered more as a substantial modification to the structure of London's government than as a fundamental reform (Travers et al, 1991). Both before and after the abolition of the GLC, the thirty two boroughs and the City of London formed the primary units of local government in

London, and thus Travers et al argue that "the existing structure of government in London was created in 1965" (Travers et al, 1991, 4). In terms of land use planning, however, the GLC did have important functions, being the LPA for Greater London as a whole, and since the abolition of the GLC and the metropolitan councils an important debate as to the future of strategic planning in Britain has emerged (Breheny, 1991; Hebbert, 1990; Roberts, 1990; Wannop, 1992).

Following most, but not all, of the recommendations of the Herbert committee report on the review of London government produced in 1960, the London Government Act of 1963 was passed, the provisions of which came into operation in 1965. The Act established the GLC and defined an area of 1,600 square kilometres as its jurisdiction, Greater London, and also created thirty two all purpose borough councils within this area, providing identical powers for the unchanged Corporation of the City of London. These new institutional arrangements replaced the London County Council (LCC), the twenty eight metropolitan boroughs, the county council of Middlesex and the county boroughs of Croydon, East Ham and West Ham. Considerable parts of Essex, Hertfordshire, Kent and Surrey were also included within the new Greater London area. (Cullingworth, Nadin, 1994)

One of the main reasons behind the new institutional arrangements, and particularly behind the creation of a London-wide council, was the need for more effective strategic metropolitan planning (Gowling, Leith, 1988; Hebbert, 1991). The London Government Act of 1963 laid down provisions for the planning of greater London. The GLC were established as the local planning authority for Greater London as a whole, with further provision that the boroughs would also be local planning authorities for certain purposes (Heap, 1982). Section 25 part 3 of the 1963 Act required the GLC to prepare a development plan which should "lay down considerations of general policy with respect to the use of land in the various parts of Greater London including, in particular, guidance as to the future road system" (London Government Act 1963 quoted in GLC, 1969, 9). This was to consist of a written statement and a map, and was to be concerned with broad policies and strategies for the future of London as a whole. Section 25 part 4 of the Act required the boroughs to prepare local development plans, intended to be essentially structure plans, which would restate the relevant provisions of the GLC's

development plan (Collins, 1994). Following the Town and Country Planning Act of 1971, some modifications were made to this development plan system. From then until 1986, the GLDP was to be regarded as the structure plan for London, borough responsibility for the production of local development plans was removed. Instead, the 1971 Act allowed the boroughs to prepare local plans, and thus introduced the principles of the Planning Advisory Group (PAG) development plan system as interpreted by the 1968 Town and Country planning Act, into the London planning system.

A two tier planning system was therefore established in London. The upper tier was responsible for the production of the London structure plan, the GLDP; the overseeing of certain types of development of strategic importance; the 'calling in' of applications of 'strategic significance' from the boroughs; and the designation of action areas within Greater London. The primary planning responsibilities of the lower tier of boroughs were in the control of development and the preparation of local plans within the context of the GLDP. The GLDP was finally approved on the 9th of July 1976. Subsequent attempts to update it were unsuccessful and it remained unchanged until abolition in 1986. The actual substance of the GLDP and of borough planning policy over this period is reviewed in Gowling and Leith (1988) and Collins (1994).

Following approval of the GLDP, the development plan for any borough in London consisted of the provisions of the GLDP, together with any notices given by the Secretary of State, and any provision of a local plan being applicable to the district (Heap, 1982). In matters of development control then, the boroughs would have regard to this development plan as well as the other material considerations which must be considered. Thus, the basic statutory institutional structure of planning in London did not appear dissimilar to that two tier system which existed in the rest of Britain following the PAG report and the Town and Country Planning Act of 1971.

However, while the division of planning functions between the boroughs and the GLC is characteristic of the general two tier system, due to the physical size of the boroughs and the wide variety of functions that they performed, the situation in London was unique (Cullingworth, 1985; Young, 1984). The relationship between the GLC and the boroughs was not straight-forward with much overlapping of functions, and as such was

not clearly hierarchical in nature (Hebbert, 1993; Cullingworth, 1985). In fact, as Cullingworth notes, and as the GLC themselves pointed out, "borough plans prepared within the 'context 'of the GLDP may in themselves raise issues which require a revision of that context, and as such the GLDP should be regarded as a conceptual plan laying down a set of principles for the future development of London which will have to undergo a process of validation extending perhaps over several years" (GLC, 1969, 9).

The planning system in London until 1986 therefore, was not necessarily the type of hierarchical arrangement implied in the legislation. As mentioned previously, the Herbert committee report stressed that an overwhelming weakness of the then London planning system was the absence of a London wide authority capable of undertaking strategic land use and transport planning (Hall, 1989a). The most important impetus behind the reorganisation of London government was to create a single planning authority for the metropolis as a whole. However, in practice the 33 boroughs became planning authorities in their own right, and tended to dominate metropolitan planning in London, with many boroughs refusing to cooperate with GLC planning policy (Hebbert, 1991; Eversley, 1984). As a result, the GLC's strategic objectives were in many cases frustrated, particularly in relation to roads, public housing and even in the creation of a metropolitan land use strategy (Hebbert, 1991). Hall (1989a) argues that "the problem of the GLC was one of flawed design, being overly restricted from the top by central government and lacking the powers to command consistency in borough policy below" (Hall, 1989a).

The 1983 white paper 'Streamlining the Cities' announced the governments intention to abolish the metropolitan councils of England citing efficiency as the main rationale (GB Minister without Portfolio, 1983). To this end the Local Government Act of 1985 was passed, being "an Act to abolish the Greater London Council and the metropolitan county councils; to transfer their functions to the local authorities in their areas and, in some cases to other bodies; and to provide for other matters consequential on, or connected with; the abolition of these councils" (Local Government Act 1985, quoted in Travers et al., 1991). The speed at which the abolition legislation was enacted has received some attention. As Hebbert (1993) points out, while local government in Britain, in the absence of a written constitution, can be created or abolished by a

majority in parliament; previous reorganisations of local government were enacted after detailed consultation and evaluation, and this was not evident prior to the 1985 Act.

The outcome of the 1985 Act for London, was that the GLC ceased to exist and its functions were distributed amongst a variety of bodies. The statutory responsibilities for land use planning in London, following the abolition of the GLC, have been divided amongst a number of different institutions. Although the 32 London boroughs and the City of London Corporation are now the prime bodies responsible for land use planning in London, their activities are influenced by and must accord with, the land use planning functions of other important institutions. Central government, through the Department of the Environment (DoE), has assumed important roles in the planning of London, essentially establishing the Secretary of State for the Environment as the strategic planning authority for London. In exercising his planning function, the Secretary of State may take advice from other bodies, and hence, other institutions come into play which are important in the planning of London, notably the London Planning Advisory Committee (LPAC) and the London and South East Regional Planning Conference (SERPLAN). To achieve an understanding of how the arrangements for land use planning in London work in practice since 1986, it is worth considering in turn the different roles of the main institutions involved.

Under the 1985 Act the London Boroughs and the City of London became the primary planning authorities in London. The most important land use planning functions of the boroughs are the preparation of Unitary Development Plans (UDPs), and the exercise of development control.

The Act established the legislative basis for UDP preparation, laying down guidelines on the form and content of UDPs, and the procedures to be followed, which have subsequently been clarified in circulars, regulations and planning policy guidance notes. A UDP is essentially an amalgamation of the structure and local plans which still exist in the non-metropolitan areas, and is to comprise two parts (Grant, Heap, 1991). Part I is analogous to the structure plan, and should be a broad development and land use strategy consisting of a written statement of the authority's general policies for the development and use of land within their areas. The legislation also requires that in the

preparation of Part I UDPs, local authorities are required to have regard to any regional or strategic planning guidance issued by the Secretary of State; any policies or proposals of an Urban Development Corporation (UDC) within the local authority area; social, economic and environmental considerations; the resources likely to be available for the plan; and any relevant national policy guidance. Part II of a UDP resembles a local plan, and translates the general strategy of Part I into detailed land use proposals, providing a framework for development control. "Part II contains a written statement of the authority's proposals for the development and use of land; a map showing proposals on an ordnance survey base; over a reasoned justification for the general policies in part 1 and the proposals in Part II of the plan" (DoE, 1992). The UDP may be adopted by the borough council following the necessary publicity of the plan policies and the results of any public local inquiry that has taken place. However, the Secretary of State has reserve powers which allow the calling in or amendment of any UDP as is seen fit. (Heap, 1991)

As mentioned previously, the 1990 Planning Compensation Act requires that in formulating UDPs, authorities must have regard to regional or strategic guidance as well as any current national policies. For the London conurbation, it is required that Part I of borough UDPs should reflect the strategic guidance of the Secretary of State. Once all Greater London UDPs are completed the network of Part I's will form the basis of the strategic development plan for London. As the DoE point out "strategic guidance will assume less importance following UDP adoption since the UDP will have been formulated having regard to it. The UDP will of course be the statutory development plan for the area." (DoE, 1989a, 6).

The second main planning function at the borough level is the exercise of development control. In carrying out development control the authority will have to consider the provisions of the development plan as well as any other 'material considerations' as outlined in the discussion of the national planning system above. Major development proposals may be called in by the Secretary of State for the Environment for his own decision or may also be submitted to LPAC who will attempt to give a pan London opinion on the application. The only major difference in development control practice in

London now, prior to that of 1986, is that the GLC no longer exist to call in applications.

In considering these two borough land use planning functions it becomes apparent that while land use policy in Greater London is essentially a borough responsibility, the function of the boroughs are heavily influenced by the planning actions of central government, and in particular the DoE. As well as exercising national functions discussed previously which are important for London, the Secretary of State for the Environment has assumed responsibility for strategic land use planning in the Greater London conurbation. Within the DoE, the directorate specifically concerned with planning Greater London was the London Regional Office, and since the 5th of April 1994, is the Government Office for London (GoL). The DoE planning division has four main tasks: pan-London strategic planning issued in the form of strategic guidance; the preparation of government views on major London development projects; the oversight of the Borough's Unitary Development Plans (UDP's); and advice to the Secretary of State on planning appeals. Of these four main tasks, it is the preparation of strategic guidance that has become the major new DoE responsibility in London planning in the absence of the GLC.

Two types of strategic guidance are prepared by the DoE, strategic guidance for London and guidance for the South East region. Strategic guidance for London has been issued in the form of a document outlining the general strategic approach that the government wish to be taken in relation to matters such as business and industry, transport, housing, the built environment, retailing, the environment and so on (DoE, 1989a). The content of the first strategic guidance issued by the DoE has been very general, and does not constitute a detailed strategic framework. In formulating strategic guidance for London the Secretary of State may take advice from LPAC who are discussed in full below. Regional Planning Guidance for the South East was initially provided in correspondence with the chairman of SERPLAN and later consolidated as PPG 9 (DoE, 1989b), and now RPG 9 (DoE, 1994). In preparing regional guidance for the South East the Secretary of State may take advice from SERPLAN. Strategic guidance for London should be formulated in the context of the Regional Guidance for the South East. As DoE point out : "Planning issues affecting London should not be viewed in isolation

from those applying to the larger region in which it is set... issues of this kind are addressed jointly through SERPLAN, and in regional guidance issued by the Secretary of State. At present London guidance is consistent with the existing region-wide guidance" (DoE, 1989a).

The strategic guidance issued by the DoE provides an important context for the formulation of UDPs by the boroughs. UDPs are required to have regard to any strategic guidance issued by the Secretary of State who retains powers to ensure that borough plans conform to the guidance. In this respect, strategic guidance is potentially a very important component of land use planning in Greater London. However as Travers et al point out, "although it could be said that a strategic framework exists in law, central government has chosen not to provide a detailed policy framework for land use and transport planning in the capital" (Travers et al, 1991, 23). However, the content of the recently published consultation draft of the new strategic guidance for London, indicates that the Government may wish to provide a slightly more detailed framework in the next round of official guidance (GoL, 1995).

The London Government Act of 1985 also made provision for the establishment of a joint planning authority for Greater London. (Grant, Heap, 1991)The statutory duties of this joint committee as laid down by the legislation were to advise the London Boroughs on planning and development issues of common interest to them; to advise government departments on what the Boroughs think about planning and development issues; and to let local authorities around Greater London, and other bodies on which they and the London Boroughs are represented, know what the London Boroughs think about the issues. (LPAC, 1988b, Grant, Heap, 1991) The body established for this purpose by the boroughs is the London Planning Advisory Committee (LPAC), a statutory body with no executive powers. Membership of LPAC is comprised of one councillor from each of the 32 boroughs and from the City of London Corporation. LPAC's most prominent statutory function is in providing advice to the Secretary of State for the Environment on behalf of the London boroughs, to assist in the formulation of the strategic guidance for London. The Secretary of State is not bound to take account of this advice in the preparation of strategic guidance. LPAC has to date submitted two rounds of strategic advice to the DoE, entitled Strategic Planning Advice for London. The purpose of this

advice has not been to provide a strategic plan but simply to provide London-wide guidance, which has in fact formed important policy input into the London boroughs' UDPs. LPAC's powers, then, are limited being simply an advisory body with no executive powers, however, LPAC still exerts an important influence on the planning of London.

The final institution to be considered in this section on the London planning system are SERPLAN. SERPLAN was founded in 1962 is a voluntary body of 64 elected members of local authorities in the South East. Membership consists of up to three members from each of the 12 county councils up to 16 members nominated jointly by London boroughs and 12 members representing the 98 district councils. SERPLAN is not an executive body but an advisory body with no statutory responsibilities. The DoE (1989b) summarises SERPLAN's function as being "to monitor regional planning and transport trends and to enable the authorities to achieve a better understanding of the regional context and, by study and discussion, to ensure co-ordination of policies" (DoE, 1989b). The Secretary of State's regional guidance for the South East was requested by SERPLAN, and the Secretary of State took into account advice provided by SERPLAN in the formulation of regional guidance. Thus the main function of SERPLAN in relation to the analysis of the London planning system outlined here is their role in advising the DoE on the issue of regional strategic guidance, within which the London strategic guidance is supposed to nest (DoE, 1989b).

The planning system in London, then, is fairly complex involving a number of different institutions playing a variety of roles. The brief outline above has not included other important policy aspects of London, such as the powers of the London Docklands Development Corporation, the non-statutory activities of local planning authorities and the variety of other governmental and quasi-governmental organisations with an interest in the Town and Country planning system. However, for the purposes of this thesis the statutory land use planning system in London can be seen as basically a function of the institutions outlined above. Essentially, the arrangements in London are a unique and complex variation on the main elements of the British planning system.

Appendix three : The Town and Country Planning (Use Classes) Order (UCO), the Town and Country Planning General Development Order (GDO), and the creation of the B1 (Business) use class and related permitted development.

The evolution of the Use Classes Order and the General Development Order.

The UCO and the GDO were established in 1948, consequent upon the statutory powers contained in the Town and Country Planning Act 1947. The two orders share common ground in the sense that they both place certain activities outwith the normal scope of development control, however, there is an important technical distinction between the two orders which should be stressed. The UCO defines a number of use classes (i.e. shops, offices, general industrial etc.) within which a change of use from one activity to another is deemed not to constitute 'development' as defined in the legislation. The GDO on the other hand, "...is a nation wide grant of planning permission for a diverse range of unconnected activities that do constitute 'development'" (Grant, 1989, 1). This is not the only distinction that can be drawn between the two orders, however, it does highlight the difference between exceptions to development under the UCO and permitted development under the GDO. The two orders therefore may have some common implications, but are technically and substantively very different.

The origins of the Use Classes Order

The legislative origins of the UCO can be traced back to the late nineteenth century, well before the first established UCO of 1948. The principle of land use classification was initially formalised in the series of 'Model Clauses' published by the Minister for Health between 1922 and 1939. Home (1989) cites these as the ancestor of the UCO. The Model Clauses, which were intended to assist local authorities in their preparation of Town Planning Schemes, contained planning standards for 'character zones', later called use zones. At the outset only four use zones were defined, residential, special industrial, general industrial or business, and undetermined. Other zones were later added such as a separate one for family dwelling houses and special industrial classes. Within each use zone "three categories of building types were identified....those which could be erected without consent, those which needed consent and those which were

excluded" (Home, 1992, 188). Thus, the Model Clauses were an attempt to classify incompatible land uses and place control over particular developments within this classification.

The last series of model Clauses were published in 1939, and while the main characteristic they share with post war UCOs may only be that they represent a type of land use classification, they did lay the foundations for more sophisticated planning instruments. Following the establishment of the Ministry of Town and Country Planning in 1943, the Pound Committee was set up to undertake a 'technical Examination of the Model Clauses in the light of subsequent developments and prospective legislation'. The Pound Committee considered use zones in detail and their recommendation, incorporated in the 1947 Ministry's advisory handbook on central area redevelopment, was to establish 13 'building use groups', intended to cover 'all forms of development required in a town', which would be allocated into eight different use zones. In each zone, the building use groups were categorised as either primary allocations, non conforming or contrary to good planning, and "acceptable or not according to the 'scale and exact location of the proposed development'" (Home, 1992, 189).

One year after the handbook was published, the first UCO was established which expanded the thirteen building use groups into 22 Use Classes. There were two main reasons for the creation of the UCO in 1948. First, to simplify the development control system, by removing changes of use within use classes from the definition of development. The UCO classified uses in terms of their similarity in environmental impact. A change of use within a use class was thought to be insignificant enough to be placed outwith planning control. This function of the UCO has led many commentators to regard it as essentially a deregulatory instrument (Grant, 1989; Thornley, 1991; DoE, 1987; PAG, 1985). The second reason for the establishment of the UCO, was for the assessment of development charge, a part of the taxation of betterment value under the 1947 Town and Country Planning Act. Home (1992) argues that it was this second reason that required the expansion of the 13 building use groups into 22 use classes because "any permission for change of use might attract a development charge, based upon the so called 'governing principles', as expressed in the land development charge

regulations: 'to secure as far as is practicable, that land can be freely and readily bought and sold or otherwise disposed of in the open market at a price neither greater nor less than its value for its existing use'" (Home, 1992, 191). In fact, the 1948 UCO was more a concern of possible valuation difficulties than it was potential environmental implications (Home, 1992; PAG, 1985). These two different reasons led to the passing of two distinct UCOs, identical in content but different in purpose.

The UCO which was specifically concerned with compensation matters remained unchanged, and is still in force today, since its amendment or revocation "was prohibited under a proviso to section III (4) of the 1947 Act, the reason being that valuation for planning compensation claims had to be made on fixed assumptions" (Home, 1989, 3). Relatively minor changes were made to the other UCO prior to the radical revisions of 1987. The Property Advisory Group (PAG) of 1985, established to undertake a review of the 1972 UCO, argued that there had been no significant changes to the UCO over the post-war period and that "the classification of some uses may have been drawn up with financial provisions in mind. Following the abolition of development charge, there would no longer be any need to perpetrate distinctions between uses where planning freedom in 1948 might have been given to owners and users were it not to have included the privilege of avoiding substantial development charges" (PAG, 1985, 12). Thus, the abolished financial provision of the 1947 Act, were still thought to be influential in the classification of the 1972 UCO, because the 1948 UCO had remained largely unchanged. It was this lack of dynamism in the order, despite much changed circumstances, which led to pressure for a major review in the 1980s.

The origins of the General Development Order.

Development orders were introduced as statutory planning instruments in 1919 as a reaction to the inadequacies of previous planning legislation (Grant, 1989). Under the Housing, Town Planning etc. Act 1909, local authorities would devise planning schemes for their areas, which if consented, allowed the local authority to demolish any development occurring within the area covered by the planning scheme, but which were contrary to it. This type of legislative provision led to a stalemate, where "a decision to

apply for consent to make a scheme would freeze development in the area" (Grant, 1989, 34). This problem was addressed in 1919 with the introduction of development orders under the Housing, Town Planning etc. Act 1919. The Act empowered the Local Government Board to make development orders "to permit the development of estates and buildings to proceed pending the adoption of the town planning scheme, subject to such conditions as may be prescribed by the order" (Grant, 1989, 34).

The provisions of the 1919 Act allowed for the creation of the Town Planning (General Interim Development) Order 1922. Unlike the post-war GDOs, this order did not grant a general permission for development, but instead created a system of interim development control, where local authorities were empowered to grant permission subject to such requirements as might reasonably be imposed. The order also included a right of appeal to the Minister on a local authority decision. As Grant (1989) points out, the creation of the General Interim Development Order was an important fore runner to the comprehensive development control system established after the war. It laid the principles of granting permission and placing conditions on planning applications and, also the principle of the rights to appeal. Although significantly different from the post-war GDOs, the contemporary government advised that its intention should be to allow development to commence, not to obstruct it, and in this sense the General Interim Development Order was at least of the same spirit as the permitted development of the post-war GDOs.

Under the 1932 Town and Country Planning Act, a GDO was established which was broadly similar to that of today. The Act empowered the minister to make a General Development Order, "with respect to the interim development of land, with power to permit the development of land either conditionally or subject to any conditions stated in the order" (Grant, 1989, 35). This was in essence the first GDO allowing a general grant of planning permission. At this time the GDO was still with respect to interim development, however interim development control was extended throughout the country under the 1943 Town and Country Planning Act, where all land was deemed subject to the preparation of a planning scheme.

In 1948 the first 'modern' GDO was established following the provisions of the relevant sections of the 1947 Act. The main functions of this GDO were related to permitted development and allowing flexibility in the development control system. Thus over time the emphasis of the instrument has changed, from one of addressing the problems of interim development control, to one of simplifying development control and attempting to provide more flexibility in the planning system. Unlike the UCO, the GDO has changed quite significantly since 1948. The flexibility of the 1948 GDO proved inadequate, having 21 classes of permitted development which were rather narrowly defined. In 1950, a substantial deregulation measure was introduced, under the Town and Country Planning General Development Order and Development Charge Applications Regulations, which "incorporated the provisions on planning applications that had previously been contained in separate regulations, and extended significantly the classes of permitted development" (Grant, 1989, 37). Since that time successive governments have attempted to lessen the limitations of permitted development. Such attempts were often frustrated by the successful lobbying of objectors and conservation groups. The 1988 GDO marks a radical change to the remit of permitted development.

This brief review of the origins of the UCO and GDO has demonstrated the ways in which the roles of planning instruments change over time. In the case of the UCO and GDO, the reasons for establishing their legislative ancestors, are very different from the purposes of the instruments as they evolved. Essentially, the two instruments have emerged as deregulatory measures, simplifying the development control process and providing degrees of flexibility in the planning system. Both the UCO and the GDO were changed by the conservative government in the late 1980s as a means of further deregulation of the planning system. As Home (1989) points out, "the conservative Government since 1979 has made several changes to the GDO, with the aim of reducing the scope of the planning system and freeing much development from planning control and the 1987 UCO applies the same approach" (Home, 1989, 1).

The technical basis of the modern UCO and GDO

The UCO is made under the relevant section of the main planning Act (currently section 55 (2) (f) of the 1990 Planning, Land, and Compensation Act), and enables the

Secretary of State to exclude from the Act's definition of development, changes of use falling within classes described in the order. Grant (1989) describes the UCO thus: "the order operates by prescribing a number of classes of use at a comparatively high level of abstraction, such as 'shop' or 'office'. Changes of use within each class are then outside planning control" (Grant, 1989, 2). The current UCO (1987) defines 16 use classes, within which change from one activity to another is deemed not to constitute development. Changes within a use class can take place bilaterally.

The use classes have generally been created through classifying activities together which have a similar impact upon amenity. The RTPI (1986) provide a useful summary of the legal and practical role of the UCO: "...the Use Classes Order is not intended as a device to permit or restrict development....rather its objective is for the clarification of section 22 of the Town and Country Planning Act 1971. This is to group together activities which are significantly similar in their character and effect on the surroundings so that a change from one activity in a group to another would, of itself, have so little effect that such a change would not amount to 'development' within the meaning of the Act" (RTPI, 1986, para 2).

There are a number of principles guiding the operation of the UCO, which have emanated largely from case law. Grant (1982; 1989) defines three main principles. Firstly, it is the predominant use of the planning unit, and not some ancillary use, against which the impact of the order is assessed. Thus, the order refers not only to buildings but to land occupied and used for the same purpose. The UCO relates to changes in primary use over this unit, not ancillary use. Secondly, the purpose of the order is to define certain types of use change which do not constitute development, but the order does not define types of use change which do involve development. Thus changes of use from one class another do not necessarily constitute a material change of use. As Grant (1989) points out, "development is not involved for example, merely because a new use would fall within a different class from the previous use or because one of them would be a sui-generis use. The question in each case is whether there has been a material change in the use of the building or other land" (Grant, 1989, 2). However, it would appear that the courts have used the use classes as a guide in the interpretation of what does, and does not, constitute a material change of use. There is

no legal basis for this use of the UCO and in fact the government specifically stated in 1985 that to view the UCO as a restrictive device was an erroneous way of regarding the order (PAG, 1985). The third important principle guiding the operation of the UCO is that not all land uses fall within a use class, some are excluded by article, others are classified as sui-generis in themselves as they do not exist with any class.

A number of other guiding principles have been established through case law. For example: use classes are to be interpreted narrowly so that they should not be stretched to accommodate uses which do not clearly fall within them; use class rights can be restricted by a condition on a planning permission; intensification of a use which falls within a use class will not require planning permission until intensification reaches a stage which places the use outside that class; where one use class is the subject of a successful enforcement notice it is not permitted to change from another permitted use in the class to that use; although freedoms granted by the UCO are national they may be stopped by a discontinuance order; and before the order can be relied upon to legitimate a change of use, there must be an existing use within one of the use classes (Purdue et al, 1989; Grant, 1982; Grant, 1989; Home, 1992; Norris, 1987; PAG, 1985).

One further important principle regarding the UCO relates to the introduction of a new order. The creation of a new UCO such as the 1987 order, cuts across pre existing planning permissions and existing use rights. In other words uses established before 1987 are able to take advantage of the freedoms offered by the 1987 UCO. However, this general principle is qualified by three specific requirements. First, the planning permission must be implemented before the freedoms granted under the new order may be exploited. Second, the new order does not override any existing planning conditions which specifically prohibit the new use. Third, when planning permission is linked to a specific use then these conditions on an application still apply.

The GDO is created by the Secretary of State for the environment under section 59 of the 1990 Planning, Land and Compensation Act. This instrument is applicable to all land in England and Wales and grants a general planning permission for 76 classes of development, known as 'permitted development'. The GDO has a number of other

functions relating to planning procedure and to restricting development and defining development that is not permitted.

For purposes here, it is sufficient to simply consider the permitted development aspect of the GDO, and particularly that contained under section 2 part 3 which allows certain changes of use. Unlike the UCO, changes allowed under the GDO are defined as development but the order itself grants a general permission for them. The changes allowed under the GDO are not bilateral, but are specifically unilateral, and this aspect of the order is commonly referred to as the ratchet effect. The direction in which the GDO will permit a change of use is one which would generally constitute an environmental improvement. The ratchet effect therefore, is designed to promote changes of use which are less problematic in planning terms (Grant, 1989). In general, the GDO is a deregulatory planning instrument, rendering certain development activities outwith the scope of planning control. In this capacity, the GDO is thought to provide a means of ensuring flexibility in the planning system (Grant, 1982).

Permission granted under the GDO may be withdrawn in two ways. Firstly, the local authority, normally with the Secretary of State's approval, or the Secretary of State himself, may by a direction under article 4 of the GDO, direct that some or all of the general permission granted by the GDO be withdrawn. This direction is normally in relation to defined geographical areas and only where the Secretary of State is satisfied that it is expedient that development within the order should not be carried on (Grant, 1982). The direction under article 4 is a power of pre-emption rather than prohibition, since its effect is to require an application to be made for express permission for development proposals, and the application will be judged on its own merits. Article 4 directions are therefore useful in providing a degree of flexibility within the freedoms granted by the GDO, however, they cannot be used extensively without good reason. Appendix D of the 1988 GDO states that the permitted development rights of the GDO have been endorsed by parliament, and as such they should not be withdrawn locally without compelling reasons. The second means through which the permitted development of the GDO may be restricted, is through the imposition of a condition upon a planning permission which may exclude, in an appropriate case, some or all of

the benefits of the GDO. The use of conditions for this purpose remains largely uncertain as there has been no specific high court rulings on the matter (Grant, 1982).

The main general principles guiding the functions of the GDO are that permission granted by the GDO is subject to any limitations or conditions specified in the order; that there is a condition imposed on all permitted development restricting hazardous activity' as defined; that the order does not permit development which requires or involves the formation, laying out or material widening of a means of access to an existing highway; and that rights to change use under part 3 of schedule 2 do not apply unless the existing use is lawful.

Reform of the UCO (1987) and the GDO (1988): the creation of the business use class and related permitted development.

By the mid 1980s the government announced that the existing 1972 UCO was in need of review. A sub-group of the Department of the Environment (DoE), the Property Advisory Group (PAG), were charged with the responsibility of undertaking, "a wide ranging and fundamental review of the order, with the object of modernising and recasting it, within the basic framework of Part III of the 1971 Act, in light of the circumstances and needs of the present and of the foreseeable future" (PAG, 1985, appendix B). However, even before the PAG report was commissioned, there had been pressure to change the UCO largely from developers and owners of property. The criticism surrounding the existing UCO was that it had become out of date and was inflexible to changes of use now required by modern businesses (RICS, 1984a; 1984b). Of particular interest here is that the 1972 UCO defined three separate use classes for offices, light industry, and general industry, and thus denied free interchange between these uses. The RICS argued that this classification of uses set out in the order was inadequate for certain business operations which "may involve research, development, manufacturing and office use within a single curtilage and therefore not fit into any single class in the present order" (RICS, 1984a, 2). For example, they argued, that the nature of modern high-technology industry required a flexibility in use classification to allow office space to change to research space, or productive space to change to storage space.

Following pressure from bodies such as RICS, and at the same time as the general deregulation of the planning system was being undertaken, the government announced its intention to revise the UCO (Thornley, 1991; Brindley, Rydin, Stoker, 1989). The white paper 'lifting the burden' articulated the government's view; " the UCO enables land and buildings to be used for various purposes without the need for planning permission, and is thus a means of deregulation like the GDO. Unlike the GDO, however, the UCO has not been substantially changed since it was first introduced in 1948, and is clearly overdue for review in light of today conditions. In particular it needs to take account of the requirements of the typical 'high tech' firms where manufacturing offices, research and development, warehousing and their activities may be carried on in a single building and where the mix of uses and space utilisation may need to be constantly changed and adapted to meet the needs of business. Since the UCO is intended to permit and not restrict compatible uses, it is essential that it should be designed to do this effectively" (GB Minister without Portfolio, 1985, 11).

The review of the UCO was undertaken by PAG in 1985. Home (1989) argues that the tight schedule the sub group were given, having to produce a final report by December 1985 following initial briefing on June 1985, meant that little background research could be attempted. Furthermore, PAG did not undertake any consultation before producing the report, despite the fact that the impact of the UCO reform would have wide reaching implications for the planning system.

The PAG report, produced in December 1985 regarded the UCO as essentially a deregulatory instrument, and in the deregulation measures it proposed, it claimed to have taken the view of the user of land and buildings, or the 'consumer' of the planning system. PAG argued that the 1972 UCO still promoted classifications based on the financial provisions of the 1947 Act, where planning freedom had been restricted in the UCO to avoid some owners and users receiving substantial development charges. The 1972 UCO then, was seen as being out of date having "remained largely unchanged for 37 years, and which clearly must be recast to meet the needs created by economic, technical and social change" (PAG, 1985, 2). PAG specified the changes which had occurred that they felt were particularly significant: traditional industry had declined in

most of the country creating increases in unemployment as well as in the amount of vacant land and buildings; the service sector had grown in importance; different functions of productive administration and selling were often being undertaken by high technology industries within the same building; there had been major spatial shifts in population involving counter-urbanisation; a motorway network had been constructed with subsequent increases in the use made of roads for goods and personal transport; and that there had been changes in the size of many activities characterised by the contraction of many larger firms and some growth amongst smaller enterprises.

As the general means of amending the order, PAG recommended three different methods. First, use classes could be expanded by allotting certain sui generis uses into existing classes, with the effect of reducing the number of changes of use under planning control. Second, new use classes could be created by grouping together sui generis uses. Third, use classes could be merged to allow a much greater number of permutations of change of use outside planning control. In addition, PAG proposed that there could be a regrouping and relocation of certain uses which may have been wrongly classified.

The final PAG report provided 14 recommendations for change to the UCO. The one of relevance here is the proposal for the creation of a new 'business use' class. The business class was to embrace offices other than those providing a direct service to the public, light industrial use, and also a number of previously sui generis uses such as the use of premises as a laboratory or as a photographic, film, television or sound recording studio; use as a library; use for commercial training units; and use for the operation of computers. Thus, it would effectively merge the previously separate light industrial and office use classes of the 1972 UCO. The PAG report argued that this business class or 'single employment class' would be beneficial since it would mean that, "the owners and users of commercial buildings could decide for themselves what activities or combination of activities could most profitably be carried on in their property from time to time and to enable them to adapt quickly to the changing demand of commerce, without having to go to the local planning authority, or, on appeal, to the Secretary of State" (PAG, 1985, 34).

The business class proposals were met with both praise and criticism. RICS (1986a) for example, fully supported the proposals on the basis that they provided a degree of flexibility which was clearly needed. However, they also suggested that the proposals should be subject to a requirement about traffic generation. The RTPI on the other hand, rejected the business class, arguing that "offices and light industrial uses should continue to be sorted into separate classes, especially on traffic grounds, but permission could be granted for both uses in some buildings" (Planning, 1986, 20). In fact the RTPI argued that the activities grouped in the business class have inherently different vehicular generation characteristics, with offices requiring more car parking than light industry, and light industry requiring more land for storage, loading, and service vehicles (RTPI, 1986).

Shortly after the publication of the PAG report, the DoE issued a consultation paper entitled 'Proposals to modernise the Town and Country Planning (Use Classes) Order 1972' (DoE, 1986b). The proposals outlined in this paper differed in important ways from those of the PAG report, however the business class was carried through. In fact, the parliamentary paper which accompanied the consultation paper argued that the most important change in the proposals to modernise the order, was the creation of a business class which would allow a more flexible use of business premises. The business class outlined by the DoE (1986b) was identical to the original PAG recommendation. It would appear that arguments were made to government on the implications of the creation of a business use class. However, some of the strongest arguments against the business use class were based on the effects of such a change on the rental values of business premises. The government discounted these arguments on the basis that rental values were "not relevant to the operation of the Town and Country Planning system" (DoE, 1986b, 6).

The consultation paper was actually a very short document, and did no more than summarise the PAG arguments in relation to the business use class. The RTPI again expressed reservations about the new class, as did local authorities amenity groups and others (Nuffield Foundation, 1986; RTPI, 1986). In fact even the RICS who had expressed full support for the PAG recommendations for a business class, were less certain by the time the DoE consultation paper was published, noting a "concern that

light industry will disappear from inner city areas if there is an automatic right to change from industrial to office use, since industry will be unable to compete commercially with offices for inner city space. One effect of this could be the loss of traditional craft industries which hitherto have been sited in town centre areas" (RICS, 1986b, 4).

The Town and Country Planning (Use Classes) Order introduced in 1987, proved identical to the proposals outlined in the consultation paper. There were many differences between the 1972 and 1987 UCO, however, the business class is arguably the most important change from the previous UCO. Entitled B1, this class is categorised under the B classes of the order. Class B2 corresponds to general industry, classes B3-B7 are the special industrial classes, and class B8 is storage and distribution. The order states that class B1 represents:

"use for all or any of the following purposes:

(a) as an office other than a use within class A2(financial and professional services),

(b) for research and development of products or processes, or

(c) for any industrial process

being a use which can be carried out in any residential area without detriment to the amenity of that area by reason of noise, vibration, smell, fumes, smoke, soot, ash, dust or grit."

Uses within B1 are therefore subject to environmental criteria or what has become known as the residential amenity test. This emphasis on broad similarities between uses in terms of their environmental impact was underlined by circular 13/87: "the new business use class brings together many of the uses described in the office and light industry classes of the 1972 order together into a single class with other uses which are broadly similar in their environmental impact" (DoE, 1987, 5). Circular 13/87 went on to clarify the types of uses that the B1 residential amenity test might encompass. These included laboratories and studios and high tech uses spanning offices, light industrial and research and development. Examples of such uses were cited as: the manufacture of computer hardware and software; computer research and development, provision of consultancy services and other sales services; and micro engineering, biotechnology and pharmaceutical research.

The B1 class was intended to be flexible, as the government pointed out, its purpose was to "allow more flexible use of premises and thus to foster enterprise where that can be achieved without significant adverse effects on the environment or local amenity" (DoE, 1987, 2). Within various policy statements the government have attempted to ensure that this flexibility is safeguarded. Circular 13/87 for example, which contains general points about the 1987 order for local planning authorities has advised: that conditions on a planning permission which would limit changes of use within B1 will generally not be acceptable; and that local authorities should take account of the 'spirit of the order' in making planing decisions with respect to the new order. Other central government advice includes: PPG 4, which states that "development plans should not seek to limit the rights to change use which are conferred by the Use Classes Order 1987" (DoE, 1988); and Strategic Planning Guidance for London (DoE, 1989a), which again specifically advises against the restriction of B1 freedom in UDPs. However, while flexibility is to be safeguarded, it is to be done so in respect of amenity and environmental criteria, and it is essentially the balance between a need for flexibility for business with a general similarity in environmental impact, which forms the basis of the classification of the UCO.

However, it is not only the changes to the UCO in the 1980s that were important. Further 'flexibility' and freedom was awarded to business uses under the 1988 GDO. Under Part 3 of Schedule 2 of the 1988 GDO, certain changes of use related to the business class were granted a general permission and thus placed outwith the scope of planning control. Within the B classes, the changes of use permitted were as follows:

"

Class B Permitted Development

Development consisting of the change of use of a building -

(a) to a use for any purpose within class B1 (business) of the schedule to the UCO from any falling within class B2 (general industry) or class B8 (storage and distribution) of that schedule.

(b) to a use for any purpose falling within class B8 (storage and distribution) of that schedule from any use falling within class B1(business) or B2 (general industry).

Development not permitted

Development is not permitted by class B where the change is to or from a use falling within class B8 of the schedule, if the change of use relates to more than 235 square metres of floorspace within the building."

The implication of these permitted development rights is that in effect the three separate classes of light industrial, general industrial, and office use now no longer exist. So for example, general industrial space can now change to any use within the B1 class. As mentioned previously in this section, changes of use permitted by the GDO are one way and are generally aimed at an environmental improvement in use. As Grant (1989) points out with reference to permitted development under the B classes, "a temporary, interim, use of general industrial premises for a more environmentally acceptable light industrial use, for example, may be permitted under these provisions, but not a return to the former industrial use" (Grant, 1989, 7).

The changes permitted under the GDO, have significantly expanded the freedom allowed in the development and use of land for economic purposes, because B1 premises of a), b), or c) type could emerge in areas of general industrial use without planning approval. Thus, the creation of the business use class under the 1987 UCO, and the extension of permitted development related to this class under the 1988 GDO, represent two interrelated deregulatory measures. They have taken certain changes of use outside of the normal control of LPAs.

Appendix four : The questionnaire survey of the London boroughs.

Methodological issues and approach to the design of the survey.

A survey based approach was used in the research to generate data that was not readily available from other sources. The survey method was used in preference to interview based techniques because many of the issues to be explored in the survey, particularly in relation to policy detail, may have required LPAs to refer to documents that they would not perhaps have had at hand in the interview situation. The use of this methodology may be criticised for a number of reasons. The possibility of producing a deficient questionnaire, and the related potential for bias, emphasise the difficulties which may be encountered when employing such a technique. A coherent methodology enhances the credibility of this type of research, and the methodological steps taken in the design of the survey are discussed below.

The planning and design of the survey loosely followed the procedure of Moser and Kalton (1987), from the initial definition of survey objectives, through consideration of the appropriate population and area to be surveyed, which in this case was the 33 planning authorities of the London boroughs and the City of London, before formulating and arranging questions within the overall survey design. Four guiding objectives for the survey were initially defined. First, to determine if, and in what ways LPAs have responded to manufacturing employment decline through the use of planning controls to protect manufacturing jobs. Second, to attain a perspective on how important the operations of land use regulation are in influencing manufacturing employment change, and how successful LPAs believe these to have been. Third, to determine how LPAs view manufacturing employment change and what they consider to be dominant factors behind this change, and to relate this local knowledge to the theoretical and empirical work presented in chapter two and three. Fourth, to gather quantitative data from the boroughs, for example requesting information on development control decisions, land use and floorspace change, the numbers and types of local businesses, and land and rental value data for different uses.

Having reviewed the literature relating to the legislative changes arising from the introduction of the business use class and related permitted development, it became apparent during the design of the survey, that these could provide a valuable 'case study' of the relationship between land use regulation and manufacturing employment change. For the purposes of fulfilling the survey objectives, a useful aspect of the legislative changes is that they have created a 'policy-on' and 'policy-off' situation for certain land use changes, since LPAs could control the changes before 1988 (policy-on) but not after (policy-off). An opportunity is therefore presented, to actually ask LPAs what difference it makes to regulate land use, albeit for a specific case. It was not intended however, that the focus on the legislative changes should limit the scope available to address the broader objectives of the survey. General questions about planning policy and manufacturing employment change, and about the success or otherwise of such policy would still be included. However, the use of the business class in the survey was considered extremely worthwhile because it would provide direct evidence on the research issues to be explored.

Following definitions of the main objectives, unstructured preliminary consultation over the content and design of the survey was undertaken with LPAC and with planning officers in the London boroughs of Barking and Dagenham, Southwark, Westminster, Kingston, and Richmond.[1] This additional methodological stage was undertaken to determine the likelihood of achieving responses to the issues being explored and to assess the general appropriateness of the survey for completion by LPAs. The benefits of consultation are highlighted by Kidder and Judd (1986) who comment that "even if the main study is to involve a mailed or other written questionnaire, it is wise to do some personal interviews as part of the pre-test" (Kidder, Judd, 1986, 225).

[1] The following people kindly assisted in consultation over the survey :
Dr John Lett and Mr Steve Cox of LPAC
Mr Frank Sweeney of the Planning and Development Division, London Borough of Barking and Dagenham
Mr Richard Linton and Mr Martin Cook of the Regeneration and Environment Department, Southwark Council
Mr Andrew Craig of the Planning and Environment Department, Westminster City Council
Mr Paul Gibson of the Planning Department, Royal Borough of Kingston-upon-Thames
Mr John Sarson of Planning, Transport and Client services, London borough of Richmond-upon-Thames

The interviews were particularly useful in obtaining initial feedback on the questionnaire design and on issues being addressed by the study, and actually altered the scope and content of the survey in three significant ways. First, LPAC and the boroughs advised that LPAs were unlikely to be able to provide detailed accounts of the mechanisms underlying manufacturing employment change, and particularly where these questions were framed on the basis of the types of theoretical perspectives outlined in chapter two. Second, the general opinion was that the survey would be more suitable if it addressed questions relating to policies and development control practice, rather than about the land value effects of regulation. Third, the five borough planning officers consulted all felt that the survey was unlikely to be able to gather the quantitative data desired as it either did not exist, or certainly not in most borough planning departments. There was a general consensus amongst the planning officers that quantitative work of the nature intended would be of particular value and that it was not well advanced in London at present. It was suggested that LPAC and the LRC were more likely to be able to provide data for my own personal analysis than the borough LPAs.

On the basis of this advice, the survey objectives were modified to focus predominantly on policy and development control issues, however, some general questions were also included about manufacturing employment decline. The survey was also changed from being qualitatively and quantitatively based, to address only qualitative issues. Following the advice of the boroughs, meetings with LPAC and the LRC were arranged, and both advised that up to date quantitative empirical research on London's manufacturing would be useful, and both authorities advised and helped in the provision of data for this purpose. In addition, the consultation stage of survey design confirmed that it would be suitable to ask LPAs about the implications of the legislative changes arising from the modifications to the UCO and GDO in the late 1980s. In fact, LPAC suggested that since the introduction of the business class and related permitted development was an important issue in London, it was likely that borough LPAs would wish to respond to this issue and would perhaps be more aware of the employment consequences of land use regulation in this respect, than they would be regarding manufacturing change generally.

A preliminary questionnaire was then constructed. LPAC had warned that many borough planning departments were understaffed, and that the response rate of the survey was likely to be poor. The rate of survey response may be adversely affected if the questionnaire itself is too long or too detailed (Moser, Kalton, 1987; Kidder, Judd, 1986). The survey therefore had to be easy to answer and not overly time consuming, while still being capable of generating the data required. For this reason, many closed questions were used in the survey. Although closed questions are quick and easy to answer, they may also result in a loss of spontaneity and expressiveness and may 'force' the respondent to choose between given alternatives (Oppenheim, 1986). It is not possible to cover all potentialities in a survey questionnaire and previous research provides a guide to survey design. However, in order to obtain accurate information written explanations were sought for many of the closed questions, and respondents were invited to suggest alternative categories in most closed questions. Kidder and Judd (1986) argue that this type of approach should reduce sources of bias, but it was also hoped that this would allow for anecdotal evidence to be gathered, and also for the boroughs who were in a position to provide very detailed answers to do so. In other words, the survey was constructed to be easy to answer but flexible enough to allow respondents to express individual opinion.

Having prepared the first draft, the questionnaire was pilot-tested in the hope of identifying any important design deficiencies. Moser and Kalton (1987) stress that this is an extremely important stage in survey design, allowing the researcher to identify vague or ambiguous questions. Relative to other methods, it is generally not possible with a survey to correct mis-understandings or to answer any questions that the respondent might have. As Moser and Kalton (1987) point out, "there is no opportunity to probe beyond the given answer, to clarify an ambiguous one, to overcome unwillingness to answer a particular question or to appraise the validity of what a respondent said in the light of how it was said" (Moser, Kalton, 1987, 260).

The boroughs that had participated in the consultation stage were chosen as the pilot population. The returned questionnaires were adequately answered and the final questionnaire was drawn up. Following the final design of the questionnaire, phonecalls were made to all 33 London borough LPAs, and contact was established with the person

most able to complete the questionnaire. At this stage some boroughs refused to co-operate further. Having established a contact within the co-operating LPAs, questionnaires were sent with a covering letter which explained the exact purposes of the survey and the types of information that it was intended to gather. In addition, manufacturing employment change data at the class level of the SIC was prepared for each borough and attached to the questionnaire. The purpose of this was first, to ensure that the survey followed in a logical fashion to research completed in chapter three, second, to demonstrate the nature of manufacturing employment change in each area that the survey was concerned with, and third, to ensure that the questionnaire held relevance for each borough in the hope of maximising the response rate.

Several boroughs responded immediately to the survey. After a period of one month, 'follow up calls' were made to the borough contacts. Eventually, 24 of the 33 borough completed and returned the questionnaire. This is a much higher response rate than is generally achieved in survey research, and considerably higher than the expectations of LPAC. The returned questionnaires were generally excellently answered. A copy of the survey questionnaire is provided below. Since the questions posed in the final survey were outlined in the appropriate sections of chapter five, they require no discussion here.

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SURVEY : Manufacturing Employment, Land Use Planning, and the B1 (business) use class in the City of London.

Dear Mr Batchelor,

Thank you very much for agreeing to take part in this survey which is being undertaken as part of my research for a doctorate at the London School of Economics. The survey is being sent to all local planning authorities in Greater London.

This survey investigates the ways in which London's planning authorities have responded to manufacturing employment decline. It seeks to determine how your authority feels about manufacturing job loss, whether policies have been developed to try to influence this loss, and how successful these policies have been. In particular, the survey focuses on policies which are aimed at the 'protection' of manufacturing jobs, where for example, the planning authority may have attempted to resist land uses change from manufacturing use in development control decisions, in order to protect the jobs offered by industry Many planning authorities in Britain have developed these types of policies, and this survey seeks to determine the extent of their use in London and how successful they are perceived to have been.

The survey also addresses issues surrounding the introduction of the business use class and how this has affected planning for manufacturing industry. In 1987 the Use Classes Order (UCO) was modified to create, amongst other things, a new business use class which essentially extended the 1972 light industrial use class to embrace offices other than those providing a direct services to the public, and research and development uses. The three uses within the B1 class may be interchanged freely, without the need for planning permission. This new freedom was further extended in 1988 under the revised General Development Order (GDO), which granted a general permission for the change in the use of land from general industrial use (B2), to any use within the B1 class. The survey asks questions about the employment and land use change implications of the new legislation and how it has affected planning policies which sought to protect manufacturing employment. It should be stressed, that when B1, business class, or legislative changes, are mentioned in the survey, they refer not only to the creation of the B1 class under the 1987 UCO, but also to the related permitted development allowed under the 1988 GDO.

The survey is organised into three main sections :
• Section 1 asks general questions about manufacturing employment in the borough over the 1980s.
• Section 2 is concerned with land use planning policies the borough may have developed over the 1980s, which were designed to influence manufacturing employment change.
• Section 3 deals with issues surrounding the introduction of the B1 legislation and how this has affected both land use planning policy and manufacturing employment within the borough.

If at any point in answering the survey questions more space is required than provided on the survey form, please do not hesitate to continue your answer on a separate sheet.

The information gathered from the survey shall be used, with an empirical analysis of employment change in London which has already been completed, to determine the extent of influence of land use planning controls on manufacturing employment change. Manufacturing employment change figures for the City in the 1980s which were produced from the completed empirical work are reproduced on the following page. When 'manufacturing' is referred to in the survey, it corresponds to the aggregation of the detailed classes of employment outlined in the table.

Thank you very much for your co-operation with this survey. I would be very grateful if you could return the completed survey as soon as possible in the addressed envelope provided. If you require any other information regarding either the content or use of the data gathered from this survey, then please do not hesitate to contact me.

Once again, thank you very much for your assistance with my research.

Yours Sincerely,

Daniel Graham

SECTION 1 : Employment Change in City of London 1981 - 1991.

The following section is concerned with issues of manufacturing employment change over the 1980s, which City of London planning authority considered important. Employment change figures for the borough have been reproduced on the previous page.

1) How important have the following factors been in creating manufacturing employment decline in the borough over the 1981 - 1991 period ?
(I - important; NI - not important. Could you please rank the factors that you have ticked as important, on scale of 1 to 4, using larger numbers to indicate higher importance)

	I	NI	Rank
Closure of manufacturing firms	___	___	___
Relocation of manufacturing firms outside borough	___	___	___
Displacement of manufacturing firms by service sector activities	___	___	___
Shedding of jobs within existing manufacturing establishments	___	___	___
Other Factors (Please specify) :	___	___	___
_____	___	___	___
_____	___	___	___
_____	___	___	___
_____	___	___	___
_____	___	___	___

2) Does City of London planning authority view manufacturing decline in the borough as :

Extremely disadvantageous ___
Disadvantageous ___
Unimportant ___
Beneficial ___
Other ___

Could you please briefly state reason(s) for your answer :

_____
_____
_____
_____
_____
_____
_____
_____

SECTION 2 : Land Use Planning Policy for manufacturing industry 1981 - 1991.

3) Did the City of London planning authority develop land use planning policies over the 1980s which had the explicit intention of protecting existing manufacturing employment ?

___ Yes (go to question 4)
___ No (go to question 11)

4) Could you please give a specific description of the main policies and the dates over which they were pursued.

5) Were there any qualifications or exceptions to the policies just described ?

___ Yes (go to question 6)
___ No (go to question 7)

6) Could you please give examples of qualifications or exceptions to the main employment protection policies for manufacturing industry.

7) How much importance did City of London place on the deployment of land use planning policy to protect manufacturing employment ?

Very important ___
Important ___
Not important ___

8)Did the borough policies described in question 4 above place more importance on some types of manufacturing than others ?

___ Yes (go to question 8)
___ No (go to question 9)

9) Considering the employment data attached at the front of this survey, could you please indicate the importance attached by your planning authority to the protection of employment in each of the industrial sectors described below.
(VI - very important; I - Important; Not Important)

	VI	I	NI
Extraction and preparation of metalliferous ore	___	___	___
Metal Manufacturing	___	___	___
Extraction of minerals other than fuels	___	___	___
Manufacture of non-metallic products	___	___	___
Chemical industry	___	___	___
Production of man-made fibres	___	___	___
Manufacture of metal goods not elsewhere specified	___	___	___
Manufacture of office machinery and data processing equip.	___	___	___
Electrical and electronic engineering	___	___	___
Manufacture of motor vehicles and parts	___	___	___
Manufacture of other transport equipment	___	___	___
Instrument engineering	___	___	___
Food, drink and tobacco manufacturing	___	___	___
Textile industry	___	___	___
Manufacture of leather and leather goods	___	___	___
Footwear and clothing industries	___	___	___
Timber and wooden furniture industries	___	___	___
Manufacture of paper/paper products; printing and publishing	___	___	___
Processing of rubber and plastics	___	___	___
Other manufacturing industries	___	___	___

10) Were the land use policies which sought to protect manufacturing employment strongly adhered to in development control practice over the 1980s?

Very strongly ___
Strongly ___
Not Strongly ___
Not at all ___

11) Does City of London planning authority consider development control to have been successful in protecting manufacturing employment over the 1980s?

___ Yes
___ No

Could you please state reason(s) for your answer :

_____
_____
_____
_____
_____
_____
_____
_____

Note : Receipt of any detailed development control data that the borough may have for change of use of light and general manufacturing (i.e. number of refusals, permissions, appeals etc.) over the 1981 -1991 period would be greatly appreciated.

12) Could you please give a brief description of any other land use planning policies that the borough had regarding manufacturing over the 1980s, indicating how successful the borough perceives these other policies to have been.

SECTION 3 : Impacts From the Introduction of the B1 (Business) Use Class and Related Permitted Development.

13) As regards general employment opportunities (all sectors) within the borough, does City of London planning authority consider the introduction of the B1 use class and related legislation to have been :

___ Beneficial
___ Detrimental
___ Both detrimental and beneficial
___ Not Important

Could you please briefly state the reason(s) for your answer :

14) If City of London pursued policies with the explicit intention of protecting manufacturing employment over the 1980s as outlined in question 4 above, how has the introduction of the B1 legislation affected these policies ?

___ Seriously undermined ability to protect manufacturing employment
___ Undermined ability to protect manufacturing employment
___ Not affected ability to protect manufacturing employment

15) Have any of the following outcomes occurred in City of London as a direct result of the introduction of the B1 legislation ?

___Change of use from general manufacturing use to office or research and development use
___Change of use from general manufacturing use to light manufacturing use
___Change of use from light manufacturing use to office or research and development uses
___Other (Please specify below)

16) For the types of land use change outlined below, could you please give a description of :
- the types of properties which have been most prone to such a change;
- the locations of these properties within the borough;
- the types of uses which now occupy these previously industrial properties; and,
- any other factors which have been found important in initiating a B1 change of these types.

i. change from general industrial to office or research and development uses.

ii. change from general industrial to light industrial use.

ii. change from light industrial to office or research and development uses.

ii. other land use changes.

17) Over the 1987-1991 period, manufacturing employment declined in the city by 72% or by 12,331 jobs. Would City of London planning authority view the role of B1 in creating this overall manufacturing employment decline as being :

___ Extremely important
___ Important
___ Insignificant
___ Not related
___ Other (please specify)

_____
_____
_____

18) Are there any other issues surrounding the introduction of the B1 legislation which were not dealt with above which City of London planning authority considers important ?

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19) Finally, if this survey has not touched upon issues that City of London planing authority has found to have been very important with B1, a brief description of any issues would be much appreciated.

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Receipt of any additional information or data that City of London may have on the B1 issue or employment within the borough would be greatly appreciated.